APR – 5 1934

FOOD INDUSTRIES

THE NEWS OF • PRODUCTION • ENGINEERING • DISTRIBUTION

BAKERY PRODUCTS

BEVERAGES

CANNED AND PRESERVED FOODS

CONFECTIONERY AND CHOCOLATE

DAIRY PRODUCTS AND ICE CREAM

FATS AND OILS

FLOUR AND CEREAL PRODUCTS

MEATS AND MEAT PRODUCTS

OTHER FOODS AND SPECIALTIES

PERSPECTIVE

Fully a dozen outstanding problems face us today.

At this time no one can evaluate their final meaning to the food industries. Intensive study is demanded.

Now, more than ever, food executives must think far ahead.

High lights from these problems are reflected in this issue. What are your reactions?

APRIL 1934

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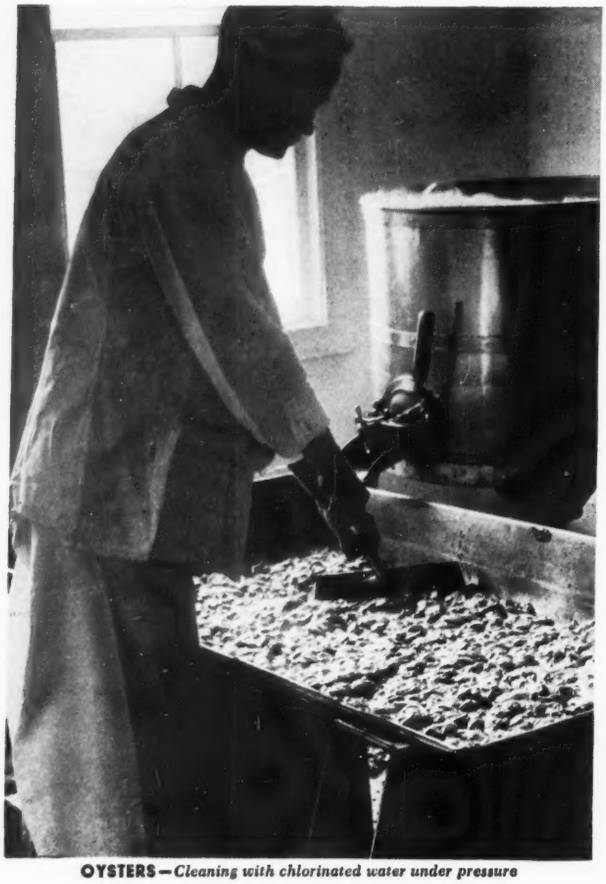
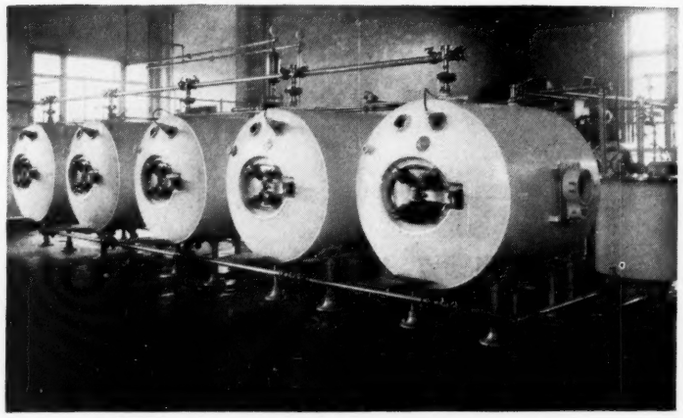


OYSTERS—*Cleaning with chlorinated water under pressure*

BREAD—*HTH prevents mold and rope spoilage in scores of bakeries*



MILK—*HTH spray keeps down bacteria counts in dairy plants*

For Low-Cost Quality Insurance...

USE HTH ON ALL YOUR FOOD HANDLING SURFACES

YOU can build a new plant with insurance money *after* trouble occurs, but you can't build a new reputation that way.

That's why so many leading food manufacturers have adopted the "quality insurance" that only *micro*-cleanliness with HTH can provide. They find that it pays dividends every day by *preventing* trouble before it occurs.

HTH is a concentrated powder for making chlorine sterilizing solutions—the only kind of a bactericide and fungicide (except steam) that's safe for use on food equipment. Unlike steam, HTH solutions cause no expansion strains—there are no living bacteria left behind due to rapid condensation on cool surfaces—no danger of scalding and added dampness around the plant.

One 4-lb. can of HTH makes 3,000 gallons of a germ-killing solution of 100 parts per million available chlorine—a non-poisonous rinse that leaves no objectionable taste or odor. One manufacturer found that 33 cents' worth of hypochlorite per day did a better sterilizing job than steam costing $2.75 in fuel consumption—a daily saving of $2.42!

Read the list below. It shows how widely HTH is being used throughout the food industries. If you've never tried chemical sterilization with HTH, ask your supply house to send you a trial case of a dozen 4-lb. cans to make a thorough test.

HTH
A stable and efficient chlorine carrier for convenient application as a
Bleach - Germicide - Bactericide
Disinfectant - Deodorant
Fungicide
This package is an accurately-measured unit containing not less than 2½ lbs. of available chlorine.
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250 Park Avenue, New York, N.Y.
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The* MATHIESON ALKALI WORKS *(Inc.)
250 Park Avenue **New York, N.Y.**

Soda Ash . . . Liquid Chlorine . . . Bicarbonate of Soda . . . HTH and HTH-15 . . . Caustic Soda . . . Bleaching Powder . . . Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide.

• • •

HTH is a highly concentrated calcium hypochlorite for making germicidal solutions, either alone or in combination with soda ash. HTH is packed in 4-lb. cans, one dozen to the case. Each can makes 30 gallons of a concentrated supply solution, containing 1% of available chlorine, at a cost of about 5¢ per gallon.

HTH Sanitation is steadily becoming the standard practise with these producers of food products:

Bakeries	Distilleries
Bottling Plants	Fish Packing Plants
Breweries	Ice Plants
Canneries	Ice Cream Plants
Cheese Plants	Meat Plants
Creameries	Milk Plants

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FOOD INDUSTRIES

NEWS OF PRODUCTION • ENGINEERING • DISTRIBUTION

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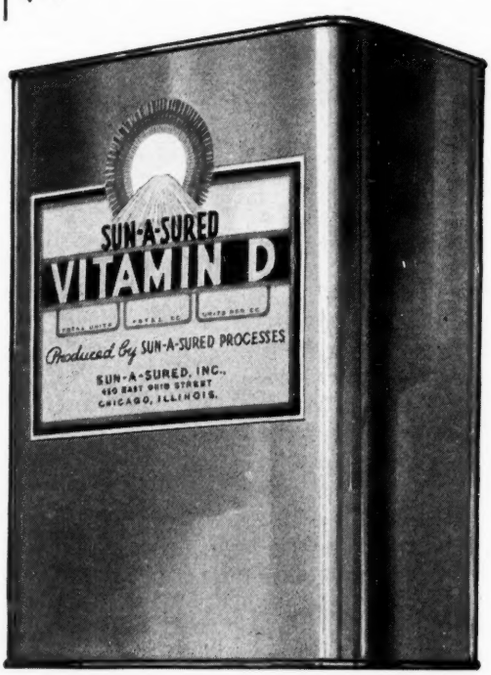
AN IMPORTANT

Announcement

TO THE FOOD INDUSTRY

"SUN-A-SURED" VITAMIN D

A NEW PROCESS DISCOVERY WHICH SUPPLIES VITAMIN D AT MODERATE COST



"Sun-A-Sured" Vitamin D is highly potent, highly concentrated.

Economical to Use

"Sun-A-Sured" Vitamin D is economical. It is moderately priced for use in the preparation of selected foodstuffs.

Does Not Affect Food Flavor

Because of the fact that "Sun-A-Sured" Vitamin D is absolutely tasteless when added in accepted quantities to foods, flavor is not in any way affected by the addition of "Sun-A-Sured" Vitamin D. Our research department will be glad to study your specific problem and give you full information on how to fortify your foods with

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PRODUCED BY EXCLUSIVE "SUN-A-SURED" PROCESSES

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FOOD INDUSTRIES

THE NEWS OF • PRODUCTION • ENGINEERING • DISTRIBUTION

Established 1928—McGraw-Hill Publishing Company, Inc.
Volume 6 Number 4

New York, April 1934 . . . Laurence V. Burton, Editor

Reform in Haste . . . Repent at Leisure

• Out of the experience of the first year of the New Deal a few things have been learned, but much more yet remains to be learned; a few things have been accomplished, but much is still undone. And some things have been done that can never be undone.

• Business is better—undeniably better—than it was a year ago. A definite degree of confidence has come to business men, but more important is the stiffening of their backbones which became so apparent at the Code Authority Conference that both the President and General Johnson had to execute an about-face on their demands for a 30-hour week. Whether this improved morale is due to acclimatization with current conditions, to cosmic forces, or to sheer will-power only time will tell. Nevertheless, the will to do, to achieve, to succeed is one of our most valuable assets today.

• The government at last is dimly beginning to recognize the effects of lack of an agricultural policy, a recognition that should have come in 1919—or earlier—but though Secretary Wallace has pointed out the probable alternative choices which America must make, the administration's silence has an eloquence exceeded only by its reticence in discussing its failure to reconcile its many contradictory policies.

• On the score of hastiness the administration has laid itself open to the greatest criticism. The A.A.A., the N.I.R.A., the original "Tugwell" bill, the air-mail fiasco, and many other improvisations were all conceived in great haste and without much fundamental thinking or thinking through. Perhaps the first of them were justified by the emergency, but it should not be forgotten that emergency repairs always need to be replaced by permanent, carefully planned reconstruction.

• The Securities Act, another hasty reform, has not only stopped any defrauding of the investing public, it has stopped nearly all investing. The pending Securities Exchange Bill may have a laudable purpose, but the threat of its enactment serves only to create uncertainty and throttle down one of the most active means of putting credit into circulation.

• And now there is a tariff bill—a bill which may not greatly modify the powers already possessed by the President, but it will greatly accelerate any tariff changes he can bring about. Another step toward hasty decisions.

• The labor rows in Detroit, Weirton and elsewhere are only a direct outgrowth of the ambiguities of Sec. 7 (a) of N.I.R.A., another result of headlong haste in legislating.

• In the meantime food manufacturers, like all business men, are in a quandary. Unhappily, most of them have a double dose of problems because they are subject to all the provisions of both N.R.A. and A.A.A. They are expected to sell their goods for reasonable prices yet are also expected to sell them for higher prices. They are expected to pay higher prices for raw materials yet not take it out of the consumer—at least not very much.

• They struggle with vexatious problems assailing them from every side. Man-made uncertainties perplex them. They have no assurance that they will be allowed to manage their own business. Their task is but to pay higher wages and higher prices, employ more people, sell cheaply, write

codes, comply with codes, commute to Washington, and somehow find the money to do it all. And the New Dealers in Washington seem to sit up nights to devise new ways to plague business. Is it any wonder that business and industry ask to be let alone for 120 days in order to get time to think, to plan, and to act?

● The tempo of the times is much too rapid for the body politic. We need to slow down, lest we jolt our economy all apart. A little less haste and more unhurried deliberation are prime necessities. Fewer hasty remarks like the White House condemnation of the Lindbergh protest, or Senator Wagner's "Last stand of the Bourbons" will be most appreciated.

● Eternity still lies ahead of us.

As It Looks To Us

Job for Somebody . . .

Here is a new job for some ingenious person—a job which has been created by Sec. 7(*a*) of the Copeland bill. It was quite evident from the testimony of W. G. Campbell, Chief, Food and Drug Administration, at the Feb. 27 hearing, that this section of the bill is going to be poison ivy for makers of loose flaked products such as corn flakes, crackles and the like.

In brief, the avowed policy of the Food and Drug Administration is to be that it will require tightly packed packages. No shaking down in transit will be permitted lest it be interpreted as criminally deceiving the public with a slack filled package.

Who will be the first to discover how to shake down a loose product in continuous production on a high-speed packaging line? Remember that three conditions must be met: (1) Don't ruin the product by crushing. (2) Don't slow down production. (3) Don't raise costs more than microscopically.

Faith in the Present . . .

Spending money to save money is just as much of an investment as spending money to make more money. The only difference between the two is the extent of the profit margin. Either one can be as good or better an investment than the other.

In each case, however, there is a slightly different basis for action, which to our way of thinking is all in favor of spending to save. If one spends for the sake of making money, the action is predicated on faith in the future, but if one spends for the purpose of saving money, the action is based on faith in the present.

Relatively few men can read the future, but all can know the present. If spending today on the basis of today's business will give an adequate return, then by all means invest. We are all in business for the profits, regardless of how much fun comes along with the day's work. Incidentally, spending money to save it is the indispensable basis of modernization.

Well, What Does *It Mean? . . .*

Just in case one of your neighbors ever has an argument with Junior over the practicability of accurately learning grammar, rhetoric or any phase of the correct use of English, it might be well to show the lad the now famous Section 7(a) (1) of N.I.R.A. where it reads:

"That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization, or in other concerted activities for the purposes of collective bargaining or other mutual aid or protection; (2) that no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing; . . ."

Apparently very few people agree as to what Congress actually meant in that sentence when the law was enacted, or what the sentence actually means. It looks simple enough, but it may take a Supreme Court decision to interpret it.

To state in writing exactly what one means is a feat for which we are acquiring the profoundest respect.

Treasurer of Their Own Choosing . . .

Whether by good luck or good policies, we ourselves have never run into any serious labor difficulties. One day in 1926 two sinister individuals tried to unionize our plant force. The "organizers" demanded access to the plant and a mass meeting on company time. They were firmly told to hire a hall and do their own canvassing.

Then we called in all foremen and the older heads, and laid the cards on the table in these words: "Boys, you are about to be compelled to make a very important decision. There are two strangers in town who want to organize a union in this plant. If you want to organize a union or join a union that is your own business; or if you don't want to join a union, that also is your own business. Either way is O.K. by me.

"You can come into the office, to see me any time you want to—now. And if you have a union—well, it will be just the same. As far as I am concerned, it won't make any difference. But you will have to make the decision whether you want a union or not.

"However, I want you to promise me one thing. If you decide on a union, I want you to elect one of your own folks as treasurer and keep your own money in your own bank. And if you want me to, I'll fix it up at the

bank so that you can have your own checking account.

"Keep your own money yourselves, and don't be giving it to strangers."

P.S.—The sinister gentlemen left town the next day.

Important for Better Packaging . . .

It is gratifying to observe the gradual increase in acceptance of the idea of protecting foods from insect infestation and destruction. For the past four years, FOOD INDUSTRIES has advocated this important adjunct to packaging.

Fumigation of foods is nothing more than a perfectly ordinary unit operation or method. Its place in the plant where there are insect problems should be considered as commonplace or as normal a procedure as material handling, cooking or packaging.

And certainly packaging is an incomplete industrial operation if it is not accompanied by proper treatment of the product itself to protect it from subsequent infestation. Only those products which can be definitely counted on to move into consumption within a week or two after manufacture are safe for omission of this protection if they are susceptible to insect destruction.

New Processes to Be Available . . .

The next big technical advance in canning, so we are informed, will be the development of better methods of sterilization. The problem of the canner is to sterilize his products by heat without overcooking them. For most products except meats and pork and beans the ideal process would be the well-nigh impossible process that would sterilize the product yet leave it practically raw.

Several developments that will approximate this ideal are said to be in the offing, and when they are made commercially available, it is to be hoped that the canners will give them the encouragement they need and deserve. The best competitive aspect that canned vegetables can possess against raw (fresh) vegetables out of season will be gained by this technical improvement.

It would be just too bad, however, if the Secretary of Agriculture were to be able to promulgate standards of quality under the proposed food law which would exclude the new style of packing, when, as and if available, from its proper quality designation. Somehow we cannot visualize any standards of quality—for example, for fancy canned peas—that would be fair to those same peas if they were in a half raw condition. This is one more reason for not proceeding too rapidly with compliance to the demand for federal quality standards, declared on the label.

Important Symptom . . .

Very little packaging equipment was on display at the Packaging Show. It is to be hoped that the guiding spirits of the Packaging Conference, Clinic and Exposition will interpret this symptom correctly, and recall that packaging is still done in the factory; not in the studio; not in the sales office.

Admittedly the package has two functions: one to carry the goods properly and safely; the other to help sell the goods. For several years the programs of the Packaging Conferences have been built around the merchandising side of packaging, with the inevitable result that those who now attend are almost entirely concerned with sales problems or package styling.

Production problems have been almost completely subordinated and therefore production men do not attend the conferences. Hence, equipment makers are finding it less desirable to exhibit, because stylists and sales managers do not buy machinery, nor do they write the technical specifications for packages or packaging materials.

Yet the production men are seeking the kind of aid in making technical decisions that should have been available, in part at least, through speakers on the program.

Cow Cycle Running True . . .

One of the many "different" features of this depression which distinguish it from other recent depressions is found in the coincidence of the peak of the cow-population cycle with the other bad factors that go to make up what we call hard times.

During the last 50 to 55 years, or ever since the Department of Agriculture has been keeping track of cow numbers, it has been found that the population fluctuates rhythmically up and down, reaching a peak every 16 years. Just why this should occur we shall not attempt to explain, except to comment that bovine ventures into matrimony and death usually are carefully arranged by men.

The last peak occurred about 1918, a time when nobody especially cared, and the last valley was observed about 1926. Those who like to look ahead and visualize the future have been agonizingly watching the cow population increase year by year during the depression, knowing that bloodshed, murder, riot and milk strikes would inevitably result as the potential milk supply steadily increased.

Each year the numbers have gone up between two and three per cent, with the peak due about 1934, if history repeats itself. Whether the peak is actually here or not cannot be definitely known until it is behind us, yet of one thing we are reasonably sure: the forecast for 1934 is only a fraction of one per cent increase over 1933.

It looks as if this one factor of prosperity is correcting itself automatically—or at least without help from Washington. And from it we conclude that better days are ahead for the industries dealing chiefly with milk. The next valley, with consequent maximum prices for milk products or animals, is due in 1942.

Artists Cannot Help . . .

Involuntary adulteration of foods in transit is a possibility that probably is unsuspected by most production men, yet under the new law this can become a criminal liability.

How can it happen? Easy! Suppose the goods become buggy. Then they are adulterated within the meaning of the law.

It hardly seems likely that anyone would have to go to jail for such an involuntary offense. But there is a definite possibility that a jail sentence might be inflicted just in case the Food and Drug Administration wanted to make an example of some luckless offender.

The remedy? Sterile goods in insect-proof packages. Protection of this kind must be worked out by food engineers working closely with supply and equipment firms. It is doubtful if any artist or stylist knows anything about the problem.

Battle of the Copeland Bill

Round 4...and Still Going Strong

By L. V. BURTON
Editor, Food Industries

RATIONALIZATION or emasculation, depending upon the point of view, of the Copeland bill, S. 2800, has taken place since Feb. 27. The majority of persons will regard the changes in the bill pertaining to food manufacture as improvements in the direction of rationalization, clarification and workability. But there will be many of the lay public who will, with grim determination, believe otherwise. The latter group, usually lacking in technical knowledge and devoid of legal experience, are unable to distinguish between revisions meant to clarify and limit a provision of the bill to the stated intent and a revision which is actually intended to destroy a constructive feature of the bill.

On pages 153 and 154 of this issue are given most of the recent important amendments to the bill that have been introduced in committee, in so far as they relate only to food-manufacturing industry.

Lasted Five Days

The hearing, called for Feb. 27, scheduled to last only two hours on Tuesday morning, dragged on until 5:50 p.m. Saturday evening. Charles Wesley Dunn testified voluminously in behalf of the Associated Grocery Manufacturers of America and other associations and urged the committee to accept the provisions of the McCarran-Jenckes bill (also known as the Dunn bill) in place of the Copeland bill. Very few food manufacturers were present. Two or three food corporation attorneys lurked in the background, but they did not testify. Mr. Dunn's efforts at the time seemed to make a great impression upon the committee, but the food provisions of the bill, as reported out, carry but few of his food recommendations.

Testimony in favor of S. 2800 or demanding a return to S. 1944 (Tugwell version) was interesting and significant. Miss Alice L. Edwards, secretary of National Home Economics Association, introduced nine sub-witnesses all in favor of a more drastic bill. Miss Edwards herself asked for widespread publicity to be given to any legal action instituted by the Secretary of Agriculture even before trial or verdict, although Senators Copeland and Murphy tried to show her that it would be grossly unfair to condemn a manufacturer by adverse publicity until it was definitely proved that he was guilty. Miss Edwards, however, was very sure that any action instituted by the Secretary of Agriculture would be based upon absolute knowledge of violation of the law and therefore could be considered as *prima facie* evidence of violation.

R. M. Allen, representing the revived American Pure Food League, was one of the food manufacturers who testified, although he failed to mention that he was engaged in the manufacture of foods (Vegex, Inc., 122 Hudson Street, New York). He expressed desire to see S. 2800 made more drastic and expressed approval of S. 1944 as a better measure.

Mrs. Harvey W. Wiley took much the same stand.

Arthur Kallett, of Consumers' Research, Inc., provided part of the more lively portions of the tedious hearing. His criticism and personal attack on Senator Copeland resulted in his being shut off from the record until he confined his remarks to the bill. The printed testimony, therefore, does not disclose all of the dispute. Mr. Kallett spent all of two hours on medical and drug features of the bill and devoted little time to food. S. 2800 was not good enough to give the protection which Mr. Kallett demanded and he urged substitution of his own bill (the Boland bill, H.R.8316).

Benjamin C. Marsh, executive secretary of the Peoples Lobby, told the committee that as far as the public is concerned, S. 2800 "is in a large measure a swindle." He put the problem squarely up to the Democratic Party, saying that they could no longer play the "baby act." His proposal is to put a government inspection stamp on every item of food, drug or cosmetic, and he declared that "until that time it is just plain 'new deal' politics in human misery."

Food Manufacturers' Views

Objections to declaring the list of ingredients in order of predominance by weight, as provided by Sec. 7(f), was taken by Charles Wesley Dunn; Dr. Stroud Jordan, representing the National Confectioners' Association; John S. Hall, representing manufacturers of fruit flavors and syrups; James Vernor, Jr., representing American Bottlers of Carbonated Beverages, and L. V. Burton, editor of *Food Industries*.

Norman Draper, of the Institute of American Meat Packers, expressed approval of the bill, but noted that meat packers operate under the meat inspection act of 1907 and expressed a desire to avoid any possible conflict of jurisdiction.

John D. Miller, of the Illinois Wholesale Grocers' Association, presented almost as broad a criticism of S. 2800 as that given by Charles Wesley Dunn.

John S. Hall, speaking for the National Association of Bakery and Confectioners' Supply Houses, National Association of Manufacturers of Fruit and Flavoring Syrups and

National Association of Manufacturers of Soda Water Flavors, was opposed to S. 1944, S. 2000 and S. 2800. He did not oppose S. 2858, but did indorse S. 2355, which amends the law of 1906. He urged vigorously that Secs. 7(e) and 7(f) be stricken from the bill.

James Vernor, Jr., stressed the hardships to be inflicted by Sec. 6(b) on Bottlers of Carbonated Beverages because it requires a label and manufacturers of 5-cent beverages cannot afford a label, but have their names blown into the bottles. Furthermore, the bottles now in use do not lend themselves to labeling. Such labels as bottlers of this class of beverages now use are the lithographed crown caps or labels and these are not large enough to carry all the information required by Sec. 6(b) in addition to the statement of ingredients required by Sec. 7(f). The combined effect of these two will be to force many smaller manufacturers out of business. He also asked that the effective date be extended from six months to eighteen months.

Chas. W. Dunn, testifying before Senate Commerce Committee on Copeland Bill, Feb. 27

Stroud Jordan, speaking on behalf of the National Confectioners' Association, asked for the addition of a clarifying clause on Sec. 3(b) to permit varying specific volume consistent with good commercial practice in the production of marshmallow, nougat and frappé. He also asked for provisos in Sec. 7(a) to permit proper protective packing of specialty products like hollow Easter eggs, and in Sec. 7(f) to permit filing with the Secretary of Agriculture a certificate of materials used in composition of a food in lieu of disclosure of that information on the label.

L. V. Burton, editor of FOOD INDUSTRIES, asked for modification of Sec. 7(f) so that manufacturers could avoid excessive cost of label changes and disclosure of proprietary formulas. He suggested filing confidential statements of ingredients with the Secretary of Agriculture as an alternative. Pointing that the arguments for retention of Sec. 7(f), based on alleged protection to unfortunate members of the public who suffer from allergy brought about by contact with foodstuffs were unsound and illogical, he declared that the whole bill would have to be completely rewritten if this were a valid principle on which it was written.

Dwight Grady, representing the California State Chamber of Commerce, Dried Fruit Association of California, and Northwest Dried Fruit Association, asked for a redefinition of interstate commerce in such a way that products could be exported that were in conformity with the laws of the importing country, although perhaps not conforming to United States law. He also desired to eliminate the minimum fine.

Most of the last day of the hearing was concerned with the rebuttal testimony of Water G. Campbell, Chief, Food and Drug Administration. "Some who criticize this measure," he said, "will criticize any measure. The character of the criticism is a revelation of the need of better regulation."

Editorial Comment on The Latest Changes

JUST exactly what is meant and what will be the final effect of deletion of the words "in a deceptive manner" from Sec. 3(b)(4) is difficult to visualize at the moment. It would appear that this would affect ice cream, oysters, and lye hominy to the largest extent.

Ethylene gas treatment of citrus fruits as a means of enhancement of color is specifically exempted from adulteration.

Deletion of the word "minimum" in Sec. 7(a) and (d) may ultimately prove to have a greater significance than is now given to it. However, the elimination of the term "minimum" standard was recommended by many persons who believe that the interest of the public will be better served if this word "minimum" is out. In the opinion of this writer, the deletion of "minimum" is merely a gesture, but compare this with Sec. 11.

The very objectionable Sec. 7(f) is not changed in any way, but if one refers to Sec. 25, it will be found that the Secretary of Agriculture is authorized to designate a list of foods having common or usual names and exempt them from the requirements of Sec. 7(f) for a reasonable time in order to permit the formulation of definitions and standards of identity. This may be something of a compromise, but for many it does not improve the situation.

The proviso exempting from the standards of quality all fresh fruits and vegetables, as required under Sec. 11, apparently is another gesture to the housewife. Several of them indicated at the hearing that they were perfectly competent to judge the quality of fresh fruits and vegetables by looking at them. But the substitution of "reasonable" for "one objectively determinable minimum" standard of quality and fill gives many manufacturers a great deal of concern.

A very curious addition has come into Sec. 15(a), relating to investigations and institution of proceedings. The Secretary is authorized to appoint an advisory committee from the food industry for the purpose of consultation in the formulation of general administrative policies for the enforcement of the act. Apparently this committee is to be quite apart from the Committee on Food Standards, as provided in Sec. 22.

The changed wording in Sec. 17(a)(6) is merely to clarify the English.

Multiple Seizures Out

One of the most important changes in the bill comes under Injunction Proceedings, Sec. 19. This section

now will stop the government from multiple seizures where the violation is one of misbranding only and does not involve danger to public health or gross deception; and provided, further, that all shipments carry the same labeling and the manufacturer has clean hands.

Sec. 22 (h) has an important deletion which deserves careful consideration. To the non-legal mind, the statement "in formulating regulations under paragraphs (b) and (c) of this section, the findings of facts by the Secretary shall be conclusive if in accordance with law" appeared to be one of those innocent-looking statements that had far-reaching implications. At the hearing on the bill Senator Hebert, formerly a judge, and Prof. David F. Cavers, one of the principal authors of the bill, engaged in a very lengthy technical debate in which Senator Hebert seemed to have the better of it. At any rate the sentence is deleted, and that probably is Mr. Dunn's greatest achievement in this round.

By changing Sec. 25 so that the effective date of the bill is twelve months instead of six months after the date of approval, a great deal of confusion will be eliminated, and some of the difficulties involved under Sec. 7 (f) are postponed.

Sec. 7 (f) Has False Premise

The following paragraph is quoted from the Congressional Record of March 15 (Senator Copeland is speaking):

"Effort was made to have the Senate committee do away with the demand for a disclosure of formulae upon the packages of proprietary foods. We did not feel free to do this because of the importance of giving the public knowledge of the ingredients. Knowing what a package contains, a person who is sensitive to a given article of food will be warned that it is included in the make-up of the product. In some cases, certainly, that is very important."

Senator Copeland and the Food and Drug Administration have stated that disclosure of the ingredients in a proprietary food would be important to protect the individual from allergy. If a person can look on the label and see what ingredients are there, he is supposed to be able to protect himself by avoiding the ingredient which causes him to manifest an allergic reaction.

Allergy is a new technical word taken from the medical profession. It is not yet in the dictionary. It refers to the condition described as an altered reaction or increased reaction of the body to substances which, to ordinary persons, are harmless. Acording to the testimony of Dr. Grafton Brown, a specialist in allergic medicine, between 7 and 15 per cent of all persons are allergic toward some ordinary substance, based on clinical evidence.

Among the common allergic reactions are asthma, hay fever, migrains headaches, hives, certain gastro-intestinal disturbances, strawberry rash, eczema, and a few other afflictions. The causal agents which stimulates these unusual reactions are among the most common substances that exist. Dr. Brown indicated that eggs, wheat and milk are the most common causes; with yeast, cottonseed and flaxseed as the next most common. Other substances in the food group which are known to be causal agents are vegetable oils, especially cottonseed and corn oil.

Dr. Brown failed to indicate in the testimony that spices also can cause allergic reactions. Capsicum, cinnamon and other spices are known to cause violent reactions.

To Protect Allergic Consumers

One of the reasons strongly advanced by the Food and Drug Administration for the retention of Sec. 7 (f) is that the allergic individual is enabled by the declaration of ingredients other than spices, flavors and colors in order of predominance by weight on the label, to ascertain the presence or absence of anything that would affect him adversely and thereby bring on an attack of hives, asthma, hay fever, and the like.

The theory is that Sec. 7 (d) will require all foods for which there is a definition and standard or identity to conform to that standard. So if the allergic person knows the composition of all foods for which a standard has been issued, that person can protect himself by that knowledge or by looking at the labels of products which have to be labeled in accordance with the provisions of Sec. 7 (f).

The theory, however, is a very doubtful plausibility. There are millions of persons who know nothing about food standards. There are more millions who eat in public eating places and never have a chance to see a label. Furthermore, when the standards themselves are examined, it is found that they are drawn in such broad terms that they permit the interchangeability of a great many substances in the composition of a manufactured food. Any one of these ingredients may be the cause of an allergic reaction and yet need not be declared upon the label.

For example, the definition of mayonnaise calls for "edible vegetable oil," yet it is known that corn oil and cottonseed oil both are causes of trouble for allergic individuals, but the label does not require their declaration. Plainly, such an unfortunate individual can get no protection whatsoever from a definition if it is anything like the list of definitions in Service and Regulatory Announcements, Food and Drug Administration No. 2, 4th revision, August, 1933. As a further illustration scrapple may be cited. "Scrapple is the product consisting of meat and/or meat byproducts mixed with meal or the flour of grain, and cooked with seasoning materials, after which it is poured into a mold." According to the list of definitions meat can be derived from cattle, from swine, from sheep, or from goats. This definition has no specification as to the particular grain to be used, nor are there any specifications as to what seasoning materials are to be used.

Allergic Theory Inconsistent

It is absolutely impossible for the allergic individual to learn the identity of the food from the definitions heretofore promulgated by the Food and Drug Administration. These criticisms are cited solely for the purpose of pointing out that if the allergic theory of protection of the public were a valid and true one, the food and drug bill would be written in vastly different language.

A careful examination of the whole question of the philosophy of Sec. 7 (f) results only in a complete breakdown of the health theory simply because it does not protect, and it should be evident to members of the Food and Drug Administration as well as the Senate and House of Representatives that this is the case. This leaves only the Tugwell economic theory for its justification. In other words, the Tugwellian economic philosophy relative to what Prof. Tugwell calls economic waste is to be imposed via Sec. 7 (f) under the guise of consumer welfare.

Copeland Bill Reported Favorably

S. 2800 Now Back in the Senate Considerably Amended

THE PROPOSED new Food and Drug Law, S. 2800, was reported back favorably, with amendments, to the Senate on March 15, 1934, by Senator Royal S. Copeland. This action followed the lengthy hearing beginning on Feb. 27. A very considerable effort had been made on behalf of food manufacturers at the hearing to obtain a further rationalization of the bill, particularly to secure modification of Sec. 7 (f), but without much success, other than the qualifying change in Sec. 25.

Only those changes in the bill which are most important to food manufacturers are presented here. Amendments by deletion are in brackets and amendments by additions are shown in italics.

Adulterated Food

Sec. 3. A food shall be deemed to be adulterated—(b) (1) If any valuable constituent has been in whole or in part abstracted therefrom; or (2) if any substance has been substituted wholly or in part therefor; or (3) if damage or inferiority has been concealed in any manner; or (4) if any substance has been added thereto or mixed or packed therewith so as to increase its bulk or weight [in a deceptive manner], or reduce its quality or strength, or create a deceptive appearance.

(e) Nothing in this act shall be construed to prohibit the enhancement of the color of mature and wholesome citrus fruits to the varietal color thereof, by means harmless to the consumer of such fruits, nor to require any declaration of such enhancement by labeling or otherwise.

Misbranded Food

Sec. 7. A food shall be deemed to be misbranded—(a) (1) If its container is so made, formed, or filled as to mislead the purchaser, or (2) if its contents fall below the [minimum] standard of fill prescribed by regulations as provided by Secs. 11 and 22.

(b) If it purports to be or is represented as a food for which a definition and standard of identity have been prescribed by regulations as provided by Secs. 11 and 22, and (1) its label fails to bear the name of the food prescribed in the definition, and [minimum] standard, or (2) it fails to conform to such definition and [minimum] standard.

[(e) If it purports to be or is represented as a food for which a minimum standard of quality has been prescribed by regulations as provided by Secs. 11 and 22, and (1) its label fails to bear, if so required by the regulations, a statement of a standard of quality in such terms as the regulations specify, or (2) it falls below such standard.]

(e) If it purports to be or is represented as a food for which a standard of quality has been prescribed by regulations as provided by Secs. 11 and 22, and its quality falls below such standards, and its label fails to bear a statement in such terms as the regulations specify, showing that it falls below such standard.

(f) The section has not been changed in any way but is now modified by Sec. 25 as amended.—ED.

(g) If it [is] *purports to be or is represented* for special dietary uses, such as by infants and invalids or for other special nutritional requirements, and its label fails to bear, if so required by regulations as provided by Sec. 22, statements concerning its vitamin, mineral and other dietary properties which fully inform the purchaser as to its nutritional value.

Definition and Standards for Food

Sec. 11. For the effectuation of the purposes of this act the Secretary is hereby authorized to promulgate regulations, as provided by Sec. 22, fixing and establishing for any food [(1)] a definition and standard of identity and [(2) one objectively determinable minimum] *a reasonable* standard of quality and fill of container; *Provided, that no standards of quality shall be established for fresh fruits and fresh vegetables.*

Investigation and Institution of Proceedings

Sec. 15. (a) The Secretary is authorized to conduct examinations and investigations for the purposes of this act through officers and employees of the Department of Agriculture or through any health, food or drug officer or employee of any State, Territory, or political subdivision thereof, duly commissioned by the Secretary. *For the purposes of consultation in formulating general administrative policies for the enforcement of this act, the Secretary is authorized to appoint an advisory committee from each of the following groups: the food industry, the drug industry, the cosmetic industry, disseminators of advertising, the public.* To aid in securing compliance with the requirements of this act, the Secretary is further authorized to accept plans for such self-regulation of advertising [and commercial] practices as tend to effectuate the purposes of this act, when presented by associations or groups representative of their industries: Provided, that [such plans shall not restrict] *nothing in this paragraph shall be construed as restricting* the responsibilities and powers conferred upon the Secretary by this [act shall not be] *act, and no plans shall be accepted which are* designed to promote monopolies or eliminate or oppress legitimate enterprise.

Seizure

Sec. 16. (a) Any article of food, drug or cosmetic in interstate commerce that is adulterated or misbranded or that has been manufactured, processed or packed in a factory or establishment, the operator of which did not, at the time of manufacture, processing, or packing, hold [a] *an unsuspended* valid permit, if so required by regulations under Sec. 12, shall be liable to be proceeded against while in interstate commerce or at any time thereafter on libel of information and condemned in any district court of the United States within the jurisdiction of which the article is found. . . .

(c) The court, [may] *shall*, by order at any time before trial, allow any party to a condemnation proceeding to obtain a representative sample of the article seized.

(d) . . . Any article condemned by reason of the manufacturer, processor or packer not holding [a] *an unsuspended* valid permit when so required by regulations under Sec. 12 shall be disposed of by destruction.

Sec. 17. (a) The following acts are hereby prohibited: . . .

(6) The introduction into interstate commerce of any food, drug or cosmetic if the manufacturer, processor or packer does not hold [a] *an unsuspended* valid permit when so required by regulations under Sec. 12.

(d) This entire sub-section has

been deleted and is not quoted. It is replaced by the following subsection.—ED.

(d) No publisher, radio broadcast licensee, or other agency or medium for the dissemination of advertising shall be deemed to have violated the provisions of paragraph (b) or (c) of this section by reason of the dissemination of any false advertisement, but the liability shall rest upon the manufacturer, packer, distributor, or seller who caused the dissemination of such advertisement. Any publisher, radio broadcast licensee, or other agency or medium for the dissemination of advertising who, on reasonable request of an officer or employee duly designated by the Secretary, wilfully refuses to furnish the name and post-office address of the person who caused him to disseminate such advertisement, shall be guilty of a misdemeanor and shall, on conviction thereof, be subject to the penalties prescribed in paragraph (b) of this section.

[(e) No dealer shall be prosecuted under paragraph (b) of this section (1) because of commerce in any article he has purchased or received in good faith, if he furnishes on request of an officer or employee duly designated by the Secretary, the name and address of the person from whom he purchased or received such article or (2)] *(e) No dealer shall be prosecuted under paragraph (b) of this section (1) for having received in interstate commerce an article and in good faith sold it, unless he refuses to furnish on request of an officer or employee duly designated by the Secretary, the name and address of the person from whom he purchased or received such article, and all documents pertaining to the delivery of the article to him, or* (2) if he establishes a guaranty or undertaking signed by the persons residing in the United States from whom he received in good faith the article of food, drug, or cosmetic. . . .

Injunction Proceedings

Sec. 19. (c) *Further to avoid multiplicity of libel for condemnation proceedings without impairing the protection of the public or the opportunity for the prompt trial on the merits of alleged violations, the district courts of the United States are hereby vested with jurisdiction to restrain by injunction, as hereinafer provided, the institution of more than one seizure action under Sec. 16 against any product if (1) the alleged violation is one of misbranding only, (2) all current shipments of the article alleged to be misbranded bear the same labeling, (3) such alleged misbranding does not involve danger to health or gross deception, and (4) such misbranding has not been the basis of a prior judgment in favor of the United States in any criminal prosecutions or libel for condemnation proceedings under this act.*

(d) *Any injunction issued pursuant to paragraph (c) of this section shall be dissolved on motion of the United States attorney (1) upon the presentation by him of a duly certified judgment of condemnation in a seizure case against such products, or (2) at the expiration of the term of court next ensuing after the term in which such injunction issued, unless the complainant files with the court a duly certified judgment rendered upon a determination of the issue of misbranding, and entered pursuant to Sec. 16 after the issuance of such injunction, or evidence satisfactory to the court of his inability to secure such determination.*

[(c)] (e) Violation of any [such] injunction *issued pursuant to this section* may be summarily tried and punished by the court as a contempt. Such contempt proceedings may be instituted by order of the court or by filing of an information by the United States attorney; and process of the court for the arrest of the violator may be served at any place in the United States or subject to its jurisdiction.

General Administrative Provisions

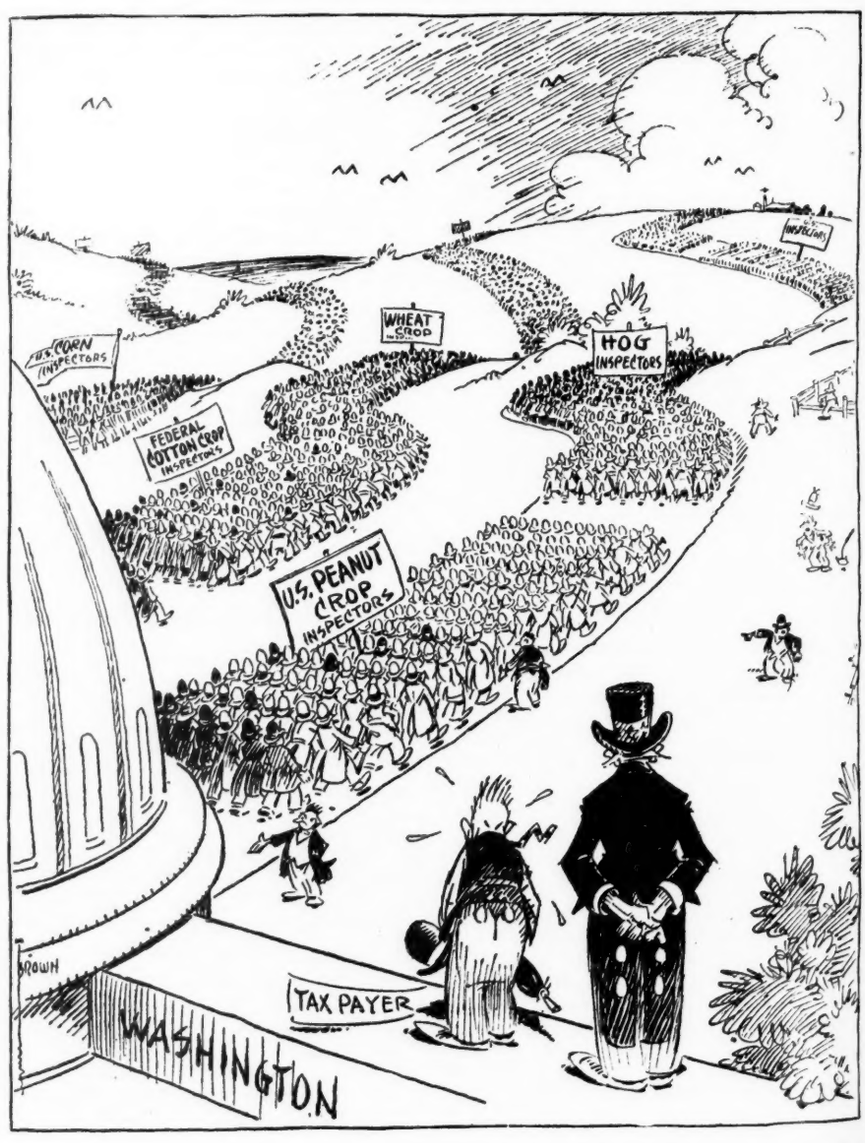
Sec. 22. (h) Hearings authorized or required by this act shall be conducted by the Secretary or such officer or employee as he may designate for the purpose. In formulating regulations under paragraphs (b) and (c) of this section, the findings of facts by the Secretary shall be conclusive if in accordance with law.]

Effective Dates and Repeals

Sec. 25. (a) This act shall take effect [six months after the date of approval] *12 months after the date of approval.* The Federal Food and Drugs Act of June 30, 1906, as amended (U.S.C., title 21, Secs. 1-15), shall remain in force until such effective date, and, except as otherwise provided in this paragraph, is hereby repealed, effective upon such date: *Provided,* that upon the approval of this act and before its effective date the Secretary is authorized to (1) conduct hearings and to promulgate regulations under the provisions hereof which shall become effective on or after the effective date of this act, as the Secretary shall direct *and (2) designate upon the approval of this act foods having common or usual names and exempt such food from the requirements of subdivision 2 of Paragraph (f) of Sec. 7 for a reasonable time to permit the formulation, promulgation, and effective application of definitions and standards of identity therefor, as provided by Secs. 11 and 22; Provided further,* that the act of March 4, 1932. . . .

THE NEXT BACK TO THE FARM MOVEMENT

Courtesy New York Herald Tribune



There's a Rigid Ritual Back of

PASSOVER MILK

That's Why Wilson & Sons Find It Good Advertising

By H. L. SPOONER
Detroit, Mich.

THERE'S no profit in it. Yet, there are advantages that make it worth while. That's what Ira Wilson & Sons Dairy Co. say about the preparation of milk for the Jews of Detroit and vicinity for their Passover season.

In the preparation of this specialized milk, extreme sanitary measures must be taken. It is a mark of some distinction for a dairy to be selected for this work. When a dairy is chosen to produce milk for the Passover season, it signifies that such a dairy is recognized as one where extreme cleanliness prevails.

The Passover season begins at sunset on the fourteenth day of the Jewish month Nisan, which this year comes on the 30th day of March, and extends for eight days. The holidays commemorate the freedom of the Jews from Egyptian slavery, a story which is familiar to all students of the Old Testament, where a colorful account is given of the 410 years of Jewish bondage, ending with the leading of the Israelites out of Egypt by Moses.

The milk which the Wilson & Sons dairy furnishes for the Passover is produced and bottled at its certified milk farm located in beautiful Livingston County, 50 miles from Detroit. Every process in the production and preparation of this milk has to be done under the supervision of a rabbi. As the Jewish religion prohibits riding in any kind of conveyance on the first two and the last two days of the season, it is necessary for the rabbi to stay at the farm during the eight days in order for him to supervise the work.

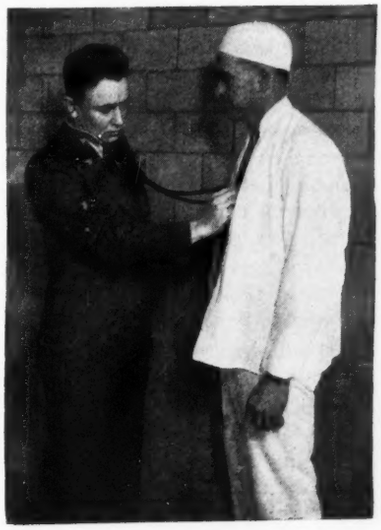
The firm thus provides suitable rooms for the use of the rabbi. He takes his own food and his own dishes and does his own cooking. Eggs form one of the principal articles of diet.

A requirement is that every utensil that comes into contact with the milk must be absolutely new. Every can, every pail, every bottle must not have been used before and bottles cannot be used even a second time for Passover milk. To prove that the articles have not been used before, they are shown to the rabbi just as they came from the store or factory. They are then cleaned under his supervision. Soap cannot be used in the cleaning process, as it is likely to be made from hog fat, which is taboo with the Jews. So an alkali cleaning powder is used for this purpose.

The milk used is that from the regular certified herd and the various processes in its preparation are the same as are used for the regular certified milk sold by the company. However, the rabbi is on the job constantly, supervising every process.

The milking is all done by hand by the regular milkers, who are dressed in complete white uniforms, including caps. The pails and cans are new and have been thoroughly sterilized. The milk is taken immediately from the stable to the pasteurization room, where it is pasteurized for 30 minutes at 145 deg F. While pasteurization is not required under the rules for producing certified milk, it adds a factor of safety. So Wilson's pasteurizes all its certified milk, both the regular and that produced for Passover purposes.

Physician examining employee at Ira Wilson dairy farm



The only difference in the bottling of the specialized milk from that of the regular certified product is that a special paper cap fastened on with a wire is used over the regular cap for the Passover product. This special cap carries, besides the name of the dairy, words in Jewish characters and the name of the supervising rabbi. In 1934, the rabbi is Abraham Schachter, and his name appears on the cap. The cap is a trademark of the genuine character of the milk as a Passover product.

As a recompense for all the extra trouble taken to produce Passover milk, an extra charge of a cent a quart is made. The bottles are used once for this particular purpose and then go into general circulation. The various utensils are used afterward in the regular routine.

"While the production of milk for the Jewish Passover," says Dr. William H. Price, of the Wilson staff, "is not particularly profitable in itself, it is one of the things that we do in line with our trade—a service that helps sustain our reputation as producers of high quality milk for every purpose. Furthermore, while we cannot definitely trace regular business to its influence, we feel that it is valuable advertising. To be chosen to furnish milk which requires such extreme cleanliness in its production and preparation, we feel, is bound to react to our benefit, not only among the Jews but also among such Gentiles as are familiar with the requirements for Passover milk."

Plastic Cream .... A NEW DAIRY

SEVERAL YEARS ago only "milk" separators were available, but recent developments in the manufacture of separators have occurred. The first change modified the construction of the separator so that much of the fat in whey could be saved, a saving worthy of consideration in a cheese factory. Later, the "cream" separator appeared on the market, making it possible to separate from gathered cream a cream containing about 70 per cent fat. This cream could then be combined with fresh whole or skimmed milk for use in butter making. In this way much of the serum of sour and off-flavored cream could be separated from the cream and thrown away and fresh serum substituted. This procedure improved the flavor of the resulting butter.

Still another type of separator has recently been developed: the "plastic-cream" separator (Fig. 2). By the use of higher temperatures and increased centrifugal force, a cream testing as much as 80 per cent fat is obtained. Commercial plastic cream usually is standardized to this test (80 per cent fat), presumably because the federal minimum requirement for fat in butter is 80 per cent. Plastic cream is often sold in competition with unsalted butter. Though based on the prevailing price of sweet butter, the price of plastic cream may be slightly higher because of the superior quality of its milk or cream source.

How Plastic Cream Is Made

Assuming that all the globules of oil in an oil-water emulsion are of the same size and are not deformed by packing, it is theoretically impossible to increase the oil content of an emulsion above 74.04 per cent. But by deformation of the globules into polyhedral forms, emulsions of considerably higher concentration can be formed. The richest cream which can be obtained with the ordinary milk separator has been reported to contain 72 per cent fat by weight. On a volume basis, this exceeds the theoretical maximum. In the case of plastic cream testing 80 per cent fat, close packing of the globules undoubtedly is made possible by the variation in size and the deformation in shape of the butter-fat globules.

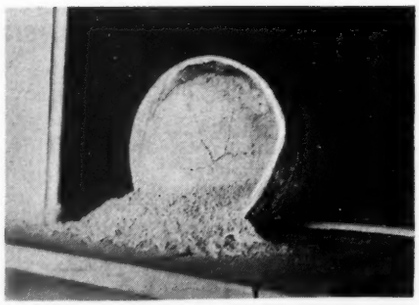


Fig. 1—Plastic cream is very rich cream in which the original fat emulsion has been little changed. Thus, when used in ice cream it produces results more like those when fresh cream rather than butter is used. The individual fat clusters are clearly shown.

Commercial plastic-cream separators make possible the separation of a cream as rich as plastic cream by using high separation temperatures and increased centrifugal force. More centrifugal force than that usually utilized in separation can be secured either by increasing the size or speed of the separator bowl or by reducing the skimming capacity of the machine. Either of these changes can be secured by minor alterations in the construction of the separator. Commercial units are made with capacities varying from 200 to 2,000 lb. of plastic cream per hour. Either sweet milk or sweet cream testing less than 40 per cent fat can be utilized.

The milk or cream is pasteurized at 145 deg. F., with a 30-minute holding period before separation. The cream flows from the separator as a viscous fluid. In a few seconds it is cooled, commercially, to 50 deg. F. over especially constructed drum coolers. The product, when cooled to this low temperature, becomes plastic and is carried away by a sterilized belt to be packaged. At the present time plain plastic cream generally is packed in 60-lb. butter tubs (Fig. 1.) lined with sterilized parchment-paper liners. The cream is removed from the tub as easily as butter and without loss.[1]

Farm separators are now manufactured which are suitable for skimming off either average-testing fluid cream or plastic cream. Skimming off plastic cream is done with the aid of a specially constructed cream spout which reduces the rate of inflow of the milk and thus allows the separation of a much richer cream. Therefore, plastic cream can be separated in small quantities from surplus milk on the farm for immediate use as a spread. In this way the necessity of churning cream into butter is obviated.

Uses of Plastic Cream

Since the introduction of plastic cream, it has been sold, chiefly to dairy and ice cream companies, in New York, Philadelphia, Chicago and throughout New England. For the past two years the Land O' Lakes Creamery Corp. has sold plastic cream through its New England warehouses. It has been used commercially in butter, dairy spreads and ice cream, and has been separated from surplus milk on the farm for home or local consumption.

When plastic cream is made into butter, the cost of manufacture is reduced because the churning process is unnecessary. After the fat is solidified by cooling, the plastic cream resembles an unfinished butter. Only working is necessary to convert the solidified cream into butter. The amount of labor, storage space and equipment are all reduced. Linneboe and Jackson[2] have found that butter freshly made from plastic cream scored as high in flavor as butter churned in the usual manner. This relationship in quality remained the same for the first three weeks of storage. After three weeks the butter made from plastic cream deteriorated more rapidly than the normal butter, undoubtedly due to its higher curd content.

Storing plastic cream in bulk is

PRODUCT ..... *is on the Market*

By M. J. MACK and C. R. FOSKETT
Massachusetts State College
Amherst, Mass.

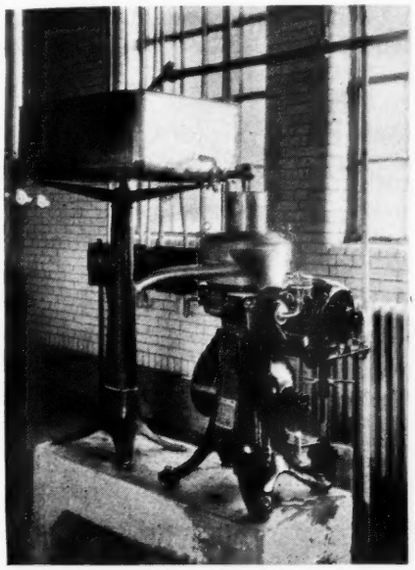


Fig. 2—DeLaval plastic cream separator and milk supply tank. The plastic cream flows from the larger spout.

governed by the same factors that control storing butter or frozen sweet cream. The product must be pasteurized to destroy fat and protein-splitting enzymes, must be low in acidity, and must be held at low temperatures. A practical commercial storage temperature for plastic cream, as well as for butter and fresh sweet cream, is —10 deg. F. The presence of iron or copper salts in plastic cream would tend to oxidize the butter fat and eventually thus cause a tallowy off-flavor. Factors detrimental, then, to stored plastic cream are high storage temperatures, high acidity, enzymatic activity and mineral-salts content.

Stored plastic cream has two chief advantages over stored frozen sweet cream: It costs less and keeps better. As a given quantity by weight of plastic cream requires about half as much space as an equal quantity of frozen sweet cream, substantially less refrigerant and container volume are needed. Keeping qualities are better because 40 per cent more serum is eliminated in separating out plastic cream than in gathering 40 per cent sweet cream; at the same time the bacteria, enzymes, metallic salts and off-flavors present in the eliminated serum also are removed.

During the past year considerable interest has been shown in the manufacture of honey-cream, a mixture of plastic cream and extracted honey. Since plastic cream solidifies when cooled, the cream is mixed with the honey immediately after the cream is obtained. Tracy[3] recommends a mixture of 42 per cent honey and 58 per cent cream. He also recommends heating the honey to 155 deg. F., in order to avoid rancidity. Other dairy spreads may be made by mixing strawberries or chocolate syrup with freshly separated plastic cream. All such spreads should be packaged while warm and in a fluid state, and then stored at 40 deg. F. or lower until used.

Has Wide Use in Ice Cream

The use of plastic cream in the manufacture of ice cream has become a relatively common practice. The ice cream industry has long needed a product high in butter-fat content which could be stored during periods when supply exceeds demand, and used during months when demand is greater than supply. Frozen sweet cream and unsalted butter have been and are being used for this purpose, but the use of each has certain disadvantages. Frozen cream generally requires considerably more handling and storage space in the ice cream plant than plastic cream. The use of butter usually produces a slow whipping mix and an ice cream of doubtful quality.

In work at Massachusetts State College the authors[4] found plastic cream well suited for use in ice cream of low to medium fat content. However, the use of plastic cream as the entire source of fat in mixes testing 18 per cent or more fat does not produce the best results. Mixes made with plastic cream are more satisfactory than those containing butter as the fat source; they are lower in viscosity; show less fat-globule clumping; and, therefore, whip more readily than butter mixes. For these reasons, plastic-cream mixes can be frozen more quickly into finished ice cream. Smaller ice crystals are formed; hence a smoother ice cream. The authors found fresh sweet cream slightly more desirable than plastic cream for ice cream. Under many conditions, however, the lower cost of plastic cream and the smaller storage space it required more than offset the advantages of sweet cream. When difficulty arises from the use of plastic cream alone in ice cream mixes, the combined use of fresh sweet cream and plastic cream is recommended.

Suitable for Table Use

Although plastic cream has been available for only a few months, it is already used regularly by many ice cream plants to good advantage as a source of butter fat. Plastic cream also makes a very desirable spread, either alone or combined with honey or some similar food product, but at present has a limited use for this purpose. Bakers, confectioners and other food manufacturers who now use butter might well experiment with plastic cream. Doubtless for many purposes this new product would have distinct merits. One has reason to expect, in view of the several advantages of the product, that plastic cream could be used in increasing quantities by the food industries as time goes on.

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It Pays to Know Your Plant Operations

[PART I]

By A FLOUR-MILL SUPERINTENDENT

Analyzing jobs and charting operations in a Western flour mill lowered production costs 40 per cent and kept operating force intact

DURING the past two years, we have been working on a task which may never be completed, yet it has already given us a 40 per cent reduction in our production costs and a better organized, a better informed operating staff. This task consists of compiling in loose-leaf record-book form a complete analysis of every operation in the mill and the setting up of a "standard procedure" by which every operation shall be carried out. It even identifies the individual who is responsible. In this way the factory operations are virtually blueprinted and each employee knows his routine, so that nothing is left to chance or to misunderstanding.

This compilation is an outgrowth of our conviction that intelligent direction and instruction of employees for the carrying out of factory operations is one of the most important factors in good plant management. Matters of policy may determine whether one or another man is to be a high executive in a company. But in the factory the man who has personal contact with actual operations holds his job because he knows better than anyone else how to perform the operation for which he is held responsible, and get the best results. In many of our industries, and the milling industry is no exception, this art of getting "best" results usually is passed on from one individual to another largely on a trial-and-error or rule-of-thumb basis.

We believe that it is only through the influence of intelligent management that these men cease to be tradition-bound craftsmen and become capable workmen who know not only the mechanical phase of each operation but also come to know the whys and the wherefores of these operations and to be on the lookout for ways to simplify or to put the operations under better control. This instruction and supervision of workmen might originate in a research or planning department. In our company, this training is resulting from an analytical study of each operation detail and its effect upon the produc-

A sheet from "standard procedure" loose-leaf record book, on which is outlined the functions and major responsibilities of the inspection department. Twenty-three "majors" are designated. Thirty are provided for in the plan for organizing and operating the department.

Standard Procedure		DEPT.	ACCT.	MAJ.	MIN.
Inspection Department	Code	9-4	21	1 - 30	
	Follow-Up			13	

Function of Department: To inspect and record weights of all manufactured products, draws, and processing of milling grains, and appearance and quality of manufactured flour and cereal; release or reject products for shipment; order chemical analysis and obtain or supervise collection and delivery of all samples necessary for inspection or mailing; determine, record, check, and report exact amount of flour and cereal packed each day; report daily wheat scale readings; maintain standards; equipment, and tallies; direct personnel and follow-up standard procedure

Major Responsibilities

1. Inspect and record weights of all manufactured products
2. Inspect stamping, cellophaning, and baling of sacks
3. Inspect stamping and wrapping of cartons
4. Inspect products for specified containers
5. Obtain samples for inspection and laboratory analysis
6. Obtain containers for, and deliver, flour and wheat samples
7. Keep standards of flour and cereal products
8. Inspect all wheat draws for accuracy
9.
10.
11. Inspect color of manufactured flour and cereal
12. Release or reject flour and cereal manufactured
13. Determine amount of flour packed; maintain and enforce correct operation of tallies
14. Report flour and cereal packed
15. Receive grinding orders; give notice of fulfillment or non-fulfillment of orders
16. Check tally with warehouse count
17. Complete and inspect tally records on packer's "Time Sheet" forms
18. Prepare and deliver mailing samples to sack department
19. Report general conditions encountered in inspection
20. Take and record wheat scale readings at end of each day's run
21. Report labor cost of inspection
22.
23.
24.
25.
26. Direct personnel
27. Maintain inspection equipment and packing room tallies
28. Receive, make out, and dispatch reports
29.
30. Follow-up

tion schedule of the entire plant as well as upon the quality of the product and the cost of production.

This latter method has the advantage that each workman enjoys the satisfaction of knowing that he is having a part in training himself to be a better and more valuable employee and in making it possible for other workmen to coordinate their activities with his to make for more harmonious working conditions and very probably more continuous employment. It must not be assumed that such a plan received the immediate support of the employee personnel. Like anything else that is new, and thought likely to take away their jobs, it had to be "sold" to them.

To obtain a general and detailed version of the mill operations we had to use an outside viewpoint. Many operations are so familiar to the experienced men—most likely to submit reports—that many important factors are taken for granted without mention. Other experienced workers seem unable to think along abstract lines or to get the theory of an operation—to them practice is everything. As the basic purpose of the analysis was to describe both the theory and the practice, so that one might be checked against the other, a technically trained man with good powers of observation and questioning technique was employed to obtain all the available data through job analysis and by quizzing all the employees. He had the job of determining: What is the operation? When is it performed? Where is it carried out? Who performs it? Why is it performed? How is it performed?

All Operations Are Defined

The entire loose-leaf book of factory procedure is an answer to these questions as they apply to each department, each unit, and each job. Besides being in the loose-leaf binder in my office, a description of each operation is typed on a sheet of paper and posted on the walls at the particular location of the operation as a guide to procedure. Thus anyone having to do with an operation is fully informed regarding its details and cannot dodge responsibility if anything goes wrong.

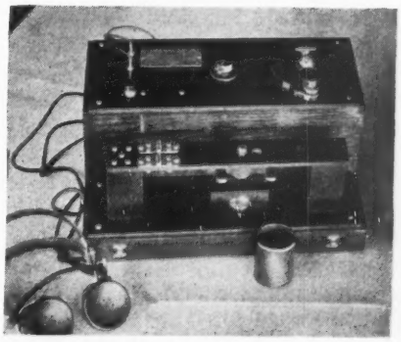
When we began to establish standards of operation and cost, we found that every task anl procedure in the plant had just "grown up." To segregate the good, bad and indifferent procedures, our first step was to make a complete chart of the plant operations as we found them. Each job was summarized on paper with a breaking down of each operation into its elements. This gave us a perspective to be analyzed objectively.

Our next step was a time analysis of each job. From the time analysis, standards were set on the basis of a leveling factor in which the skill of the operator, effort given during the study, and the operating conditions were taken into consideration. Elimination of waste motion—made apparent by time study—utilization of all production factors, rearrangement of equipment and work routine, all played a part in the reconstruction of the human factors involved in production control.

In Part II of this article will be described the method by which this practical yet inquiring-minded mill superintendent obtained what his company terms "standard procedure." It is to appear in the May issue of FOOD INDUSTRIES.—EDITOR.

INSTRUMENT *Quickly Measures Moisture in* DRIED FRUIT

TO meet the long-felt need of a simple yet accurate method of determining the moisture content of dried fruit, Dried Fruit Association of California has developed a portable electrical measuring device. Accurate to within one per cent of the exact value, the instrument operates upon the Wheatstone bridge principle and determines moisture content by measuring the electrical conductivity of a sample of dried fruit.



Instrument for determining moisture content of dried fruit, with cover removed and ear phones attached ready for service. Potentiometer is at upper right; cylinder for dried-fruit sample in foreground. Note upper and lower electrodes

Two types of the instrument have been developed. One uses ear phones to determine the point at which the current flow is balanced, and the other uses a microammeter to make the same determinations. The former is better adapted for general use because it involves less risk of damage in operation. The ear phones will take the full electrical output without injury, but the microammeter must be protected by resistances when low-resistance fruit samples are being tested. Furthermore, the ammeter type must be connected with 110-volt, a.c. current, while the audible type requires dry cells only.

To make the moisture determination, the dried fruit sample is ground up in a standard food chopper, then pressed down, with the fingers, into a small Bakelite cylinder. The cylinder, the ends of which are open, is set into position on the front of the machine, an electrode making contact with the fruit at the bottom, and a second electrode contacting it at the top.

When the current is switched on, a potentiometer is adjusted until the hum in the ear phones is a minimum, and at this point the potentiometer reading is taken. At the same time the temperature is determined by a thermometer inserted into the sample. With relative resistance and temperature known, reference to a simple table makes it possible to read directly the percentage of moisture content.

Dried Fruit Association of California, which holds patents on the machine, manufactures and sells it at cost, the cost being about $60, depending upon equipment desired.

Treatment of Incoming Supplies

Is a Safeguard Against

INSECT PESTS

Storage at 32 deg. F., exposure to fumigants, and heating to 140 deg. F. give effective results

By **HARRY STINER**
Albany, N. Y.

● The preceding article of this series treated with various formulas of poisons, sprays and baits recommended for use in the pest-control program that will follow. In this article we shall continue the discussion on agents. In both articles each formula or note is given a number which will be used in future references.—Author.

THE PROPER storage and protection of raw materials in some food plants involve an unreasonable amount of care and expense. This may be assigned in part to the kind of foodstuffs handled or to the construction of the building. However, while these factors may often claim a large share of the cause, much the greater part will be found to start from materials coming into the plant already infested. These infestations may have occurred in transit or the material may have been infested when shipped. Be that as it may, the fact remains that when a foodstuff is inclosed within a reasonably tight container there is little chance of it being discovered until the package is opened.

There are two ways infestations of this sort may be stopped. One is the materials can be placed in cold storage immediately upon receiving, and either held there at 32 deg. F. for over two months or used up promptly when taken out. The second is to fumigate all packages of foodstuffs arriving at the plant before they are taken to the storerooms. This second method will permit of a large part of many food-plant supplies being held in normal storage, and if the fumigating is done consistently with all incoming materials the greater part of the storage losses from insects will be eliminated.

Fumigation, with the development of new and safer gases, is adaptable to all forms of materials, both incoming and outgoing, and should be the principal pest control feature in every food plant and raw material storehouse.

8—Fumigants and Fumigant Sprays

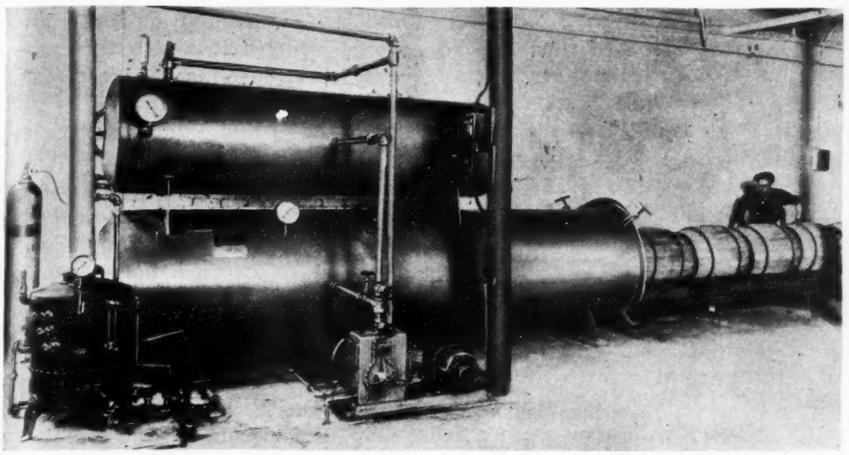
The popular basic fumigants and fumigant sprays in general use today are: cyanide, carbon bisulphide, sulphur and the mixtures of ethylene oxide with carbon dioxide, ethylene dichloride with carbon tetrachloride, and propylene dichloride with carbon tetrachloride. There are several other fumigating gases on the market; most of which, however, are sold under private trade names. Many of these are mixtures of the gases listed above, while others are of entirely different materials. The fact that these various fumigants are not described or specifically recommended herein should not be construed to imply their inferiority to the ones listed.

Cyanide produces a very poisonous gas and should never be used except under the direct supervision of a specialist or someone fully familiar with it. There are three popular methods of applying the gas: (*a*) from the sodium or potassium crystal form by generating in open earthenware vessels with acid and water; (*b*) by the direct application of a highly volatile liquid form, and (*c*) by an especially treated brick or powdered form which is spread around the room or in the material to be treated and is generated slowly by the moisture in the air. This last is the safest form to use and is very effective in buildings or for loose objects. Exposure time usually is 12 hours in buildings. The dosage required should always be obtained when the material is purchased.

Cyanide gas has a strong affinity for moisture and is not generally used for moist foods. It also, like most other gases, affects the flavor of certain foods—and has been accused of leaving a poisonous residue on the materials treated. This last would hardly seem true, however, considering the large amounts that are being used for treating foodstuffs every day. Cyanide gas is not considered explosive from a commercial viewpoint.

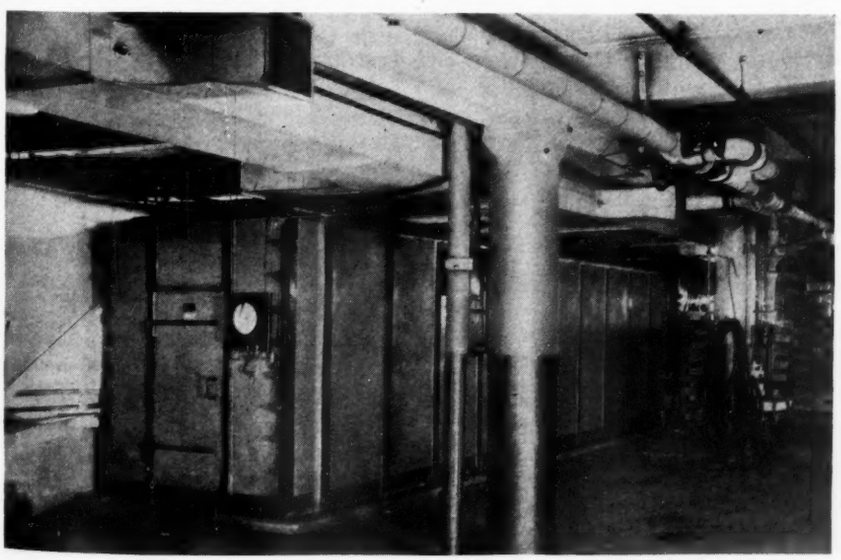
Carbon bisulphide is an old-time favorite among fumigants and, although it has been superseded in some fields by newer and safer gases, still holds its place for many methods. Carbon bisulphide has no affinity for moisture, but will affect the flavor of many oily materials. It is highly inflammable and explosive in the gaseous state; therefore it must always be protected from fire or high temperatures. The gas is not as toxic as cyanide, but 24 hours usually is considered sufficient exposure time in tight atmospheric vaults. It is

MATERIALS IN BULK CONTAINERS are best treated in airtight compartments and by a quantitatively controlled method of treatment to assure satisfactory results. Vacuum fumigation in specially designed equipment is often employed.



BY HAVING THE FUMIGATING CHAMBER extend through an intervening wall, all susceptible materials may be made insect-free before they are permitted to pass from the receiving department into the plant. Also all finished products ready for shipment may be given a final protecting treatment before leaving the plant.

TO DESTROY INSECT EGGS and microorganisms in packaged fruits, heat-treatment under controlled temperature and humidity conditions is sometimes resorted to. The heat-treatment chamber operates on the principle of a multi-lap bake oven The unloading and loading take place at the same point and give continuous operation.



commonly used in fumigating materials outside of buildings where artificial heat is not required, such as in railway cars or small vaults. It is used extensively also in combination with carbon dioxide in vacuum fumigation of foodstuffs, particularly where the material is of a decidedly moist nature. The average dosages and times are: 3 to 4 lb. per 1,000 cu.ft. of vault space for 24 hours at 70 deg. F. in atmospheric fumigation, and 30 lb. per 1,000 cu.ft. 27-in. vacuum, and one-hour exposure at 70 deg. F. with the vacuum process. In atmospheric vaults the liquid is evaporated naturally from large shallow pans above the material, or poured directly upon it. Highly refined grades must always be used when placed in contact with foods, as the lower grades leave a residue of sulphur when evaporating.

Sulphur—Sulphur dioxide, usually produced by burning sulphur, is one of the oldest fumigants, but has been superseded to a large extent by later materials. Perhaps its greatest use around food plants today is for fumigating flour-handling equipment, such as bolters, conveyors and bag cleaners. The usual dosage is about 2 lb. of sulphur per 1,000 cu.ft. of space for at least 12 hours. The equipment must always be aired out thoroughly before reusing.

Burning sulphur produces an intense heat; therefore the utmost caution must be used around inflammable materials. The pan containing the sulphur must be placed within a large shallow pan of water. This method also will prevent the sulphur from spattering out on the equipment, where it would be difficult to remove and also would taint the flour. The equipment must always be cleaned thoroughly before fumigating; otherwise the fumes will not penetrate. Sulphur dioxide is a strong bleaching agent and also will tarnish polished metals. Certain insurance codes object to the use of sulphur in wooden equipment.

Ethylene oxide-carbon dioxide mixture, in the ratio of 1:9, respectively, is one of the late fumigating mediums. It is reasonably non-toxic to the higher animals, is safe, and with many materials is very effective. It is marketed in high-pressure steel cylinders and requires only the opening of a valve to apply. It is fairly rapid in its killing action—comparing favorably with carbon bisulphide—but is less effective than the last-mentioned gas on most moist mate-

rials. This mixture is put out under several different trade names and is quite popular. Dosages for atmospheric fumigation of reasonably dry materials range from 13 lb. to 20 lb. per 1,000 cu.ft. at 70 deg. F., and a 24-hour exposure period. Moist or tightly packed materials will often extend the quantities and exposures to twice those given. In vacuum fumigation the dosage varies with the commodity, but for reasonably dry materials usually is 35 to 45 lb. per 1,000 cu.ft., 29½-in. vacuum, and 2-hours' exposure at 70 deg. F. This mixture is approved by the fire underwriters.

Ethylene dichloride-carbon tetrachloride mixture in the ratio of 3:1, respectively, is another late fumigant; also an excellent fumigant spray. It is reasonably non-toxic to the higher animals, is safe, and with many materials is very effective. It is a liquid at normal temperatures but nearly as volatile as carbon bisulphide; however, it is not explosive and is approved by the fire underwriters. It is not quite as rapid in its killing action as is carbon bisulphide but just as positive, and has little or no affinity for moisture. There are four common methods of applying this gas: (*a*) by overhead natural evaporation in vaults; (*b*) by pouring directly upon the material, as in freight cars, or down conveyor shafts; (*c*) by generating in a double hot-water boiler at 200 deg. F. when a shorter exposure time is desired in atmospheric vaults; and (*d*) by spraying the liquid directly upon the parts to be treated. This last method is used extensively in fumigating flour-handling equipment, cabinets and stored foods in boxes, cartons, bags, or when an oil spray would be objectionable. There are many uses the pest-control operator will find for this liquid in his spray gun, and it is reasonable in price. The usual dosage for this mixture is 14 to 25 lb. per 1,000 cu.ft. at 70 deg. F. for 24 hours by natural evaporation in atmospheric vaults, or less for longer periods; about 25 lb. per 1,000 cu.ft. for 24 hours in box cars and the like; and 30 lb. per 1,000 cu.ft. at 70 deg. F. for 12 hours when evaporation is forced by hot water. It is not generally recommended for vacuum fumigation because of its slowness.

Propylene dichloride-carbon tetrachloride mixture in the ratio of 3:1, respectively, is similar as a fumigant and fumigant spray to the preceding gas, except that it is slower and less volatile. Its toxicity is considered slightly less than the preceding gas—in the gaseous state—but is just as effective in the liquid form as a spray. It has been used very successfully in treating large bins of grain. It is sold on the market under various trade names and the cost usually is the same to a little lower than the ethylene dichloride mixture. It is not recommended for general vault or vacuum fumigation because of its slowness.

9—Heat-Treatment

Heat-treatment of foodstuffs for the control of food pests plays an important part in many food plants. It is easily possible to produce a temperature that will destroy any particular pest found in a plant; and when the material treated will stand this temperature satisfactorily it usually affords the most economical method possible.

Atmospheric fumigating chambers have been successfully used on a small-scale basis.

Heat-treatment, as discussed here, will be confined strictly to various heated-air methods used in food plants, warehouses and mills for the destruction of storage insects and spiders. For this purpose a maximum temperature of 140 deg. F. reaching the insect for one-half hour will assure a kill in all cases. It may be from any reasonably dry air source, such as steam or hot-water radiators, hot-air systems or an ordinary stove, and the materials may be in almost any type of container.

In treating movable commodities the only requirements are: a box or vault sufficiently tight and insulated to hold the desired temperature with the amount of heat available, some form of heating apparatus, and an injected thermometer readable from outside. A window in the vault wall, a light inside, insertion thermometers in the material, recording thermometers, and heat-controlling apparatus are all added conveniences to the larger vaults, but only luxuries to the small ones.

In entire mills, factories or large individual rooms that are equipped for winter heating the procedure is just as simple, except that in the majority of plants only enough heat is available to afford a normal temperature during cold weather, which requires that all heat-treating be done during the warm months.

Flour mills are quite commonly treated one to three times each summer. The treatments, when two or more, should be about two weeks apart. In this manner insects that may have been in some cool spot, covered with a protective layer of dirt or flour, probably will have moved to a more exposed location by the next time. In any large mill or building—with its comparatively cool basement floors and outside walls—the chances of obtaining a 100 per cent kill in one treatment are very remote; therefore, while even three heats may not produce this desired condition in some buildings, it will at least reduce the number remaining to a point where a reinfestation will be relatively longer in forming.

The only preliminary work necessary in treating a mill or factory is to clean all parts thoroughly—including machinery and conveyors—slacken all belts, and cover each window, outside door and vent holes with heavy paper. Next place several easily readable thermometers in the coolest parts of the building and not over 12 in. from the floor, then turn on the heat and, where possible, regulate its distribution until every part has attained at least 140 deg. F. In large plants this will require several hours. The heat should then be held at this temperature until all machinery and equipment is heated through. This usually will require an additional three or four hours.

The average watchman experiences no difficulty in making his rounds in a temperature of 140 deg. F. This should be done each hour during the treatment, but a system of bells always should be provided where he can ring in at frequent intervals as a check.

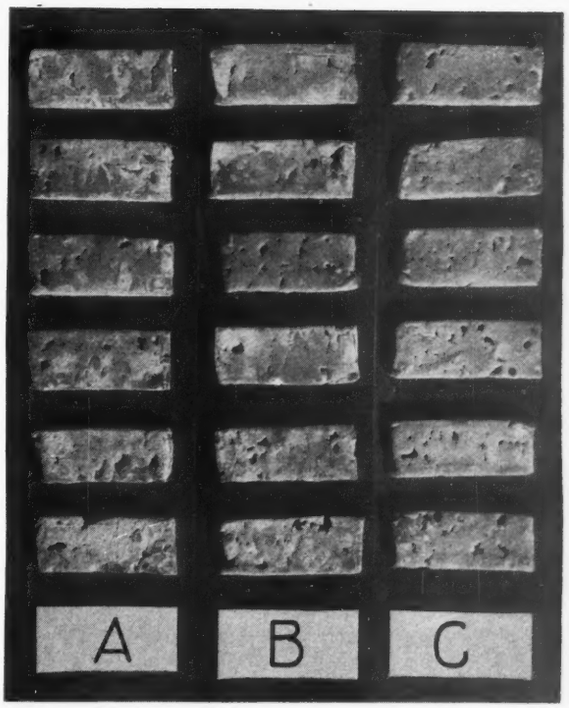
In the next article of this series will begin the discussion of ordinary pests encountered in food plants.

Irradiation Failed to Prevent *Molding of Cheese*

By WALTER V. PRICE

Department of Dairy Industry
University of Wisconsin
Madison, Wis.

Although the results of this test were negative, this brief description is presented to aid others in avoiding needless repetition of the work.—EDITOR.



Series A = No irradiation. Note white, feltlike mold growth.

Series B = Irradiated 3 minutes. Distinct mold growth but not as vigorous as in Series A.

Series C = Irradiated 5 minutes. Scanty mold growth.

Note tendency for mold to grow in small colonies. The cheese in each series is identical and was held in aluminum foil wrappers for 5 weeks at 45 deg. F.

THE growth of mold upon the surface of American cheese which has been cut and wrapped in foil for retail sales prevents extensive marketing of cheese in this manner. Owen[1] has shown that mold growth on bread can be checked, even under very favorable growing conditions, by the use of ultra-violet rays. This application of irradiation suggests the possibility of preventing the growth of mold at low temperatures on the surface of cheese in foil-wrapped packages.

To test this possibility, aged cheese was cut on a slicing machine into pieces approximately 1x3x10 cm. Each piece of cheese was then placed on a square of aluminum foil of such size that it could be folded tightly about the cheese. No attempt was made to avoid contamination by molds which were present in the room where the cheese was cut.

The experimental cheese was exposed, at a distance of 4 ft., to the direct rays of an Eveready arc lamp equipped with Type C carbons made by the National Carbon Co. This arc used 60 amp. of current at 50 volts. The pieces of cheese were divided into four groups. The first group was wrapped in the foil immediately after cutting and was never exposed to the carbon arc. The second group was exposed to the rays of the lamp for 1 minute; the third group received a 3-minute exposure; and the last group had an exposure of 5 minutes. The method of exposure permitted the foil which touched the cheese to receive the same light treatment as the cheese itself. As soon as the exposures were completed, the foil was wrapped tightly around the cheese and carefully folded, in order to prevent contamination during storage. All the packages were held at a temperature of 45 deg. F. and were examined after 1, 3 and 5 weeks. Fifty samples of each group were prepared, so that fifteen could be taken from storage for examination after each interval and then discarded.

After one week in storage at 45 deg. F., the cheese showed no mold growth in any package regardless of the light treatment.

After three weeks of storage, numerous mold colonies appeared on the surface of the cheese in the control group. A few colonies were found on the lots of cheese exposed for 1 and 3 minutes, but on those lots exposed for 5 minutes there were practically no colonies which would be detected by casual observation.

After five weeks of storage, the mold on the surface of the cheese in the control group had spread so that it covered the cheese to form a feltlike growth. It was impossible to distinguish between the control group and the cheese irradiated for 1 minute. The mold on the cheese which had been irradiated for 3 minutes seemed to be less vigorous and thinner than that on the control and the cheese irradiated for 1 minute. Although the mold was present in noticeable quantities on the cheese which had been irradiated for 5 minutes, the growth was scanty and thin.

The effects of these treatments are illustrated in the photograph, which was taken after the cheese had been in storage for 5 weeks. Series A in the photograph was not irradiated. The lighter areas indicate a heavy feltlike growth of mold which in some samples covers the entire surface of the cheese. Series B was irradiated for 3 minutes and Series C for 5 minutes. The absence of vigorous mold growth on the cheese in Series C is evident by the fairly uniform appearance of the samples. The B series, which was exposed for 3 minutes, shows mold growth distinctly on practically every sample.

It is unfortunate that the delay in mold growth that is caused by irradiation is not sufficient to make this treatment practicable for preventing

(Turn to page 171)

[1]Owen, Wm. L.: "Ultra-Violet Rays Prevent Molding of Bread." FOOD INDUSTRIES, Vol. 4, p. 208; 1932.

Control of Appliea Heat is the Secret of *Bake-Oven* Performance

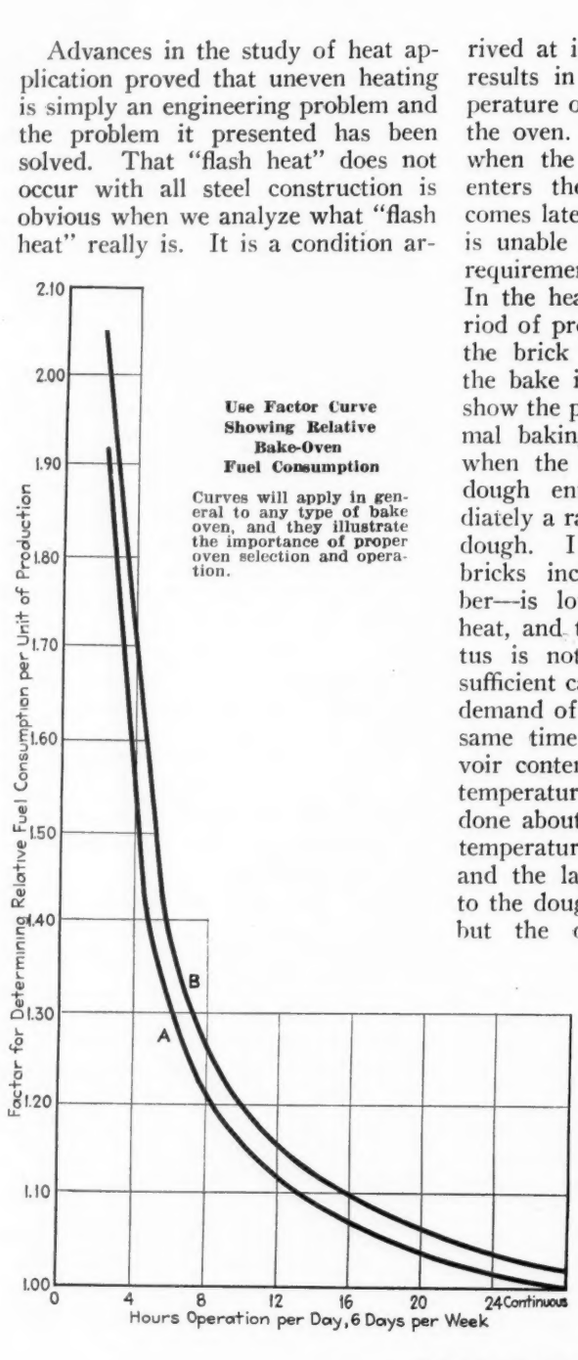
"Flash heat" ceases to exist if heat of correct intensity is supplied to all parts of the baking chamber as needed. Composition of baking-chamber gases does not affect the flavor quality of the baked product.

By HARRY CARLTON
New York, N. Y.

THE INTRODUCTION of steel-clad traveling ovens met a barrage of criticism, astonishing in retrospect but no less severe at the time. The crux of this battle was reached between 1925 and 1927, but controversy still remains as to the relative merits of brick and steel-clad ovens for the production of quality bakery products. This controversy results primarily from confusion as to the attributes of heat and the methods of its application—a confusion which has not been lessened by the high-sounding technical names applied by oven manufacturers to their methods of heat application.

The all-brick traveling ovens had walls at least 20 in. thick. Their weight was tremendous and required special foundations. Their cost was in keeping with their size. That oven builders, as well as bakers, were sincere in considering this heavy, heat-absorbing construction essential to the production of a quality product need not be disputed. They had reason for this belief, because in the brick oven it is necessary to build up a reservoir of heat in the baking chamber to insure even heat distribution and to avoid the condition known as "flash heat." In the steel-clad oven without a brick-lined baking chamber there is no provision for such heat reservoir. Therefore the inferiority, if not the utter impracticability, of the steel oven seemed obvious when steel-clad ovens were first introduced.

Advances in the study of heat application proved that uneven heating is simply an engineering problem and the problem it presented has been solved. That "flash heat" does not occur with all steel construction is obvious when we analyze what "flash heat" really is. It is a condition arrived at in bake-oven heating which results in a large drop in the temperature of the oven upon loading of the oven. This drop usually occurs when the load of cold dough first enters the oven, but sometimes it comes later if the heat-supply system is unable to keep up with the heat requirements of the baking dough. In the heavy, brick oven a long period of preheating is necessary to get the brick thoroughly heated before the bake is started. The oven may show the proper temperature for normal baking—say, 450 deg. F.—but when the large mass of 90-deg. F. dough enters, there occurs immediately a rapid transfer of heat to the dough. If the heat reservoir—the bricks inclosing the baking chamber—is low in quantity of stored heat, and the heat-supplying apparatus is not flexible enough and of sufficient capacity to meet the sudden demand of the cold dough and at the same time replenish the heat-reservoir content of the bricks, the oven temperature drops. Nothing can be done about it except to build up the temperature slowly. This takes time, and the lag is not only detrimental to the dough going through the oven but the oven operation must be



Use Factor Curve Showing Relative Bake-Oven Fuel Consumption

Curves will apply in general to any type of bake oven, and they illustrate the importance of proper oven selection and operation.

Curve A—Oven loaded with pan bread to maximum capacity during hours of operation.

Curve B—Covers loss of 15 per cent of oven capacity during hours of operation, due to breaks in production and improper loading.

Practical efficient operation will fall somewhere between Curves A and B. Fuel consumption with continuous operation and maximum loading is assumed as having a factor of 1.00. Does not include losses during shut-down periods.

slowed down, the baking time increased, and the whole production schedule in the plant slowed up.

The well-insulated steel oven, equipped with a steel hearth and without added heat-absorbing material, will not produce a "flash-heat" condition. The light-weight steel parts of the oven absorb comparatively little heat and are not depended upon to aid in uniform distribution of heat or to take up the shock of sudden demands. Instead, a heating system of sufficient capacity and flexibility is provided to meet any possible requirements. There is no difficulty in doing this with the present fuels and fuel-burning equipment.

This flexibility of the steel oven permits an accurate thermostatic control and makes it adaptable to the baking of any type of product.

The bugaboo of "flash heat" having been dispelled by the actual operation of steel ovens—and tribute should be given to the first bakers who had the courage to purchase and install them—other heating fads have arisen. We hear much, for instance, about "radiant heat." As a matter of fact the primitive ovens, previously described, baked by radiant heat. The baking was done after the fire was pulled by the heat stored in the walls radiating to the dough.

There are three methods of transferring heat from a high-temperature body to one of the lower temperature. These have been defined as follows:

Radiation—Transmission or projection of heat from a high-temperature body to a low-temperature body without the intervention of matter—as the sun radiates heat to the earth.
Conduction—Transfer of heat by direct contact between the two bodies. When this occurs between the parts of one continuous body, it is called "internal conduction."
Convection—Transfer of heat from the high-temperature body to the low-temperature body by a moving fluid mass, such as air, water or combustion gases.

A simple illustration of each would be:

Radiation—The heat felt when holding the hand at some distance from a radiator in still air.
Conduction—The heat felt by actually touching the radiator.
Convection—The heat felt when holding the hand in a stream of air moving from the radiator.

In any oven there is present a combination of all three methods of heat transfer in a greater or lesser degree. The heat radiates from the brick walls, from the hot flues, or from steam pipes to the dough. The dough rests on a hot hearth and is heated by conduction. The movement of the conveyor and dough in a mechanical oven causes a circulation of air and gases in the oven and the gases and water vapors rising from the baking dough, whether on a stationary or moving hearth, cause movement of the oven atmosphere. This movement of hot air or gases applies heat by convection. All bottom heat transmitted through the hearth and all heat transmitted through the pan is conduction heat. To go further, as radiant heat always is transmitted in a straight line, only the top crust of the loaf in the case of panned bread and the top and parts of the sides in hearth bread can be subjected to radiant heat. The interior of the loaf is actually heated by internal conduction through the dough itself.

The important factor is that the dough receives the proper amount of heat. In the final analysis, baking is a chemical change produced by the proper application of heat.

Of course, in practical baking the term "radiant heat" generally means heat applied by hot flues, steam pipes, electric heaters or brick oven walls—indirect heating—as against the free circulation of the hot combustion gases in the baking chamber from open fires—direct heating—which would similarly be termed "convected heat."

This discussion on heat transfer by convection leads us into another subject of dispute: the "atmosphere" in which the bread is baked, regardless of whether it is baked in its own atmosphere produced by the gases given off by the baking dough or whether the combustion gases from the burning fuel are permitted in the baking chamber. Again the practical consideration involved is direct or indirect heating. The first condition is attainable only by indirect heating and the latter condition must be present in case of direct heating.

Certainly in the old days of wood, coal and coke it was important from the standpoint of cleanlinesss to keep the smoke and dust from contact with the dough. Even with oil, if burned in the baking chamber, there is some danger of imperfect combustion resulting in the deposit of a film of oil on the dough.

With gas, however, we have a different condition. Gas might be described as a fuel which has gone through all the processes necessary to prepare it for producing heat except mixing with air and the final act of combustion. "Nothing but gas burns" is one way of saying that all fuels must be converted into gas before they can be burned.

City gas is produced from coal and enriched by the addition of oil; nat-

● In this series of five articles the author has attempted to give a general picture of the types and sizes of ovens available to meet the requirements of the baking business or other food industries whose production processes include the application of heat, together with a general exposition of the underlying principles of oven building and heat application.

● When we consider that the oven represents the largest individual machinery investment, the heaviest operating cost, that its capacity is the capacity limit of the plant, and its efficient operation is essential to quality, we realize the importance of proper selection.

● While we can credit the oven manufacturer with outstanding progress in the development of better ovens, it must be admitted that a little more "get together" between the oven builder and the baker might have tended toward better mutual understanding and hastened practical development. More appreciation of the baker's requirements and a clearer exposition, without mystifying technical terms and ballyhoo, of what the manufacturer has to offer to meet these requirements would greatly simplify both oven building and oven purchasing.

● It is impossible to set down any formula which will enable a baker to select the proper oven for his particular purpose, because consideration must be given to so many factors. Not only should a study be made of all the various kinds of goods turned out but consideration should be given to possible changes in his product to meet future demands of his consumers.

● Then there always is the possibility of rearrangement of present schedules and machinery, and possible additions. Distribution, labor and fuel conditions must be taken into account. The adoption of the Baker's Code, with its possibilities of territorial limitations and price fixing, may make comprehensive changes imperative, especially in the case of bakers operating with old and inefficient equipment.

ural gas may be added if available. It is composed of hydrogen, methane, ethylene, illuminants, carbon monoxide, carbon dioxide, oxygen and nitrogen. When mixed with air it has the same constituents, but the proportions are different. When burned completely the combustion products are carbon dioxide, nitrogen and water vapor. Natural gas is composed of hydrogen, methane, ethylene and nitrogen. Mixing with air adds oxygen and increases the nitrogen content. The combustion gases are the same as for city gas—carbon dioxide, nitrogen and water vapor. Sulphur may be present in both city and natural gas, but in such small quantities as to be negligible.

The same result is obtained from any fuel where complete combustion is accomplished; gas just happens to be in a condition more easily adaptable to complete combustion.

As to any possible effects of the combustion gases on the dough, carbon dioxide and water vapor are among the gases thrown off by the baking dough, and therefore the combustion products of completely burned fuel leave the atmosphere unchanged except for an increase in its carbon dioxide, nitrogen and water-vapor content. Nitrogen is already present in the air in the baking chamber, and in any event is an inert gas having no effect on the dough. At baking temperatures, the water vapor actually is a gas and is not present in the form of moisture. Furthermore, as the dough itself is giving off gases during the bake it cannot at the same time absorb them.

To go from theory to practice, the American Gas Association and the American Institute of Baking cooperated in a series of tests of bread baked in various atmospheres. In one test, dough from the same batch was put through two ovens in a commercial bakery. One oven was direct-fired, with all the combustion gases released in the baking chamber. In the other oven the top burners were shut off from the baking chamber, and only such part of the combustion gases from the lower burners entered the baking chamber as found their way around the traveling hearth. No difference could be detected in the baked loaves.

Tests were made also by the American Institute of Baking, using indirect-fired ovens and direct-fired ovens, and in one experiment the dough was baked surrounded by raw, unburned gas.

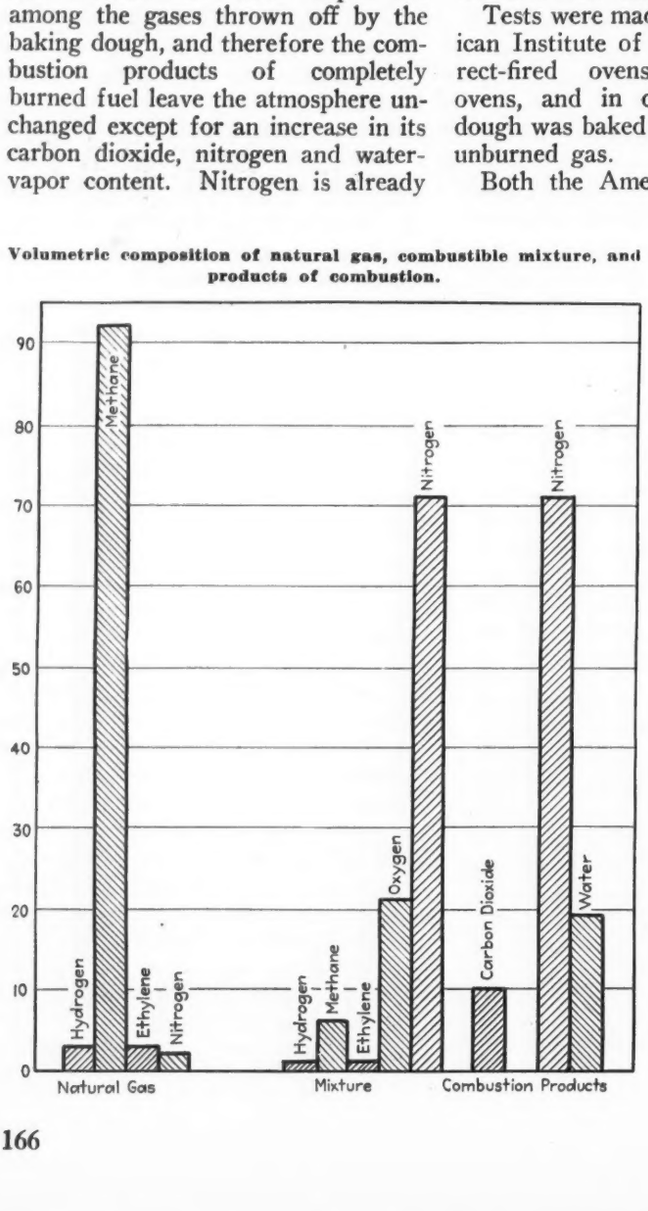
Both the American Gas Association and the American Institute of Baking came to the following conclusion:[1] "The quality of bread with respect to its flavor is not affected by the kind of atmosphere in which it is baked."

As another result of this same series of tests, one objective of which was "determining the best method of heat application to the operation of bread baking," the American Institute of Baking published the following conclusion: "The best method of heat application for bread baking can be achieved through either low-temperature radiation or convection, or a combination of the two. . . . The choice rests largely on the economics and engineering of oven design combined with the economics of available fuels."

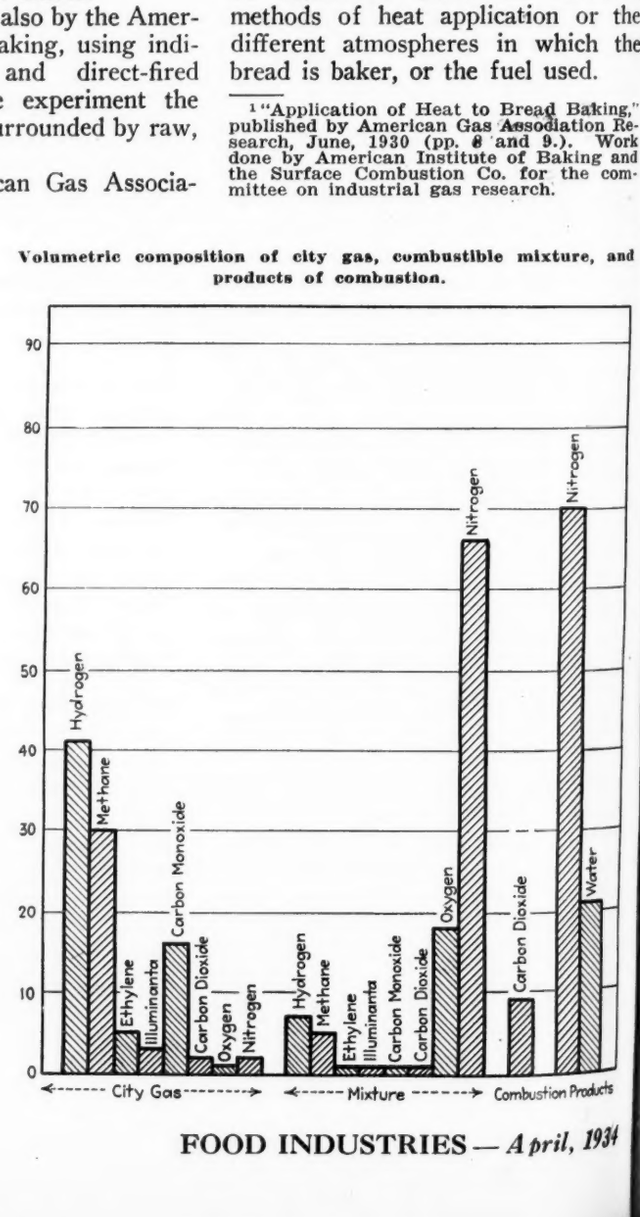
More convincing, perhaps, are the hundreds of ovens in daily commercial operation, employing both direct and indirect firing, with no appreciable difference in product which can be attributed either to different methods of heat application or the different atmospheres in which the bread is baker, or the fuel used.

[1] "Application of Heat to Bread Baking," published by American Gas Association Research, June, 1930 (pp. 8 and 9.). Work done by American Institute of Baking and the Surface Combustion Co. for the committee on industrial gas research.

Volumetric composition of natural gas, combustible mixture, and products of combustion.



Volumetric composition of city gas, combustible mixture, and products of combustion.



"Sealed Corn"

The Key to the Changed Meat Situation

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"SAVE CORN" is the current, belt-wide slogan generating a grain conservation furor, striking in contrast to prodigality in dissipating the crop of 1932. Pseudo-economists then actually advocated incineration of a surplus; livestock was literally bedded down with grain; and feed was considered a liability. In many localities, free, or available, corn has disappeared. Livestock is going aboard cars and trucks prematurely and every stockyard in the country displays low-yielding cattle and hogs that, under normal conditions, would have been held three to six months.

On the huge corn surplus from the 1932 crop, cattle were nursed in futile hope of repetition of the previous year's prices, hogs attaining superfluous weight, incidentally causing accumulation of excessive lard and meat stocks. Cattle are now being fed by the calendar and when a hog attains a heft of 250 lb. it is hustled to the butcher. This tendency is reflected in market values as weight constantly acquires respect in buying circles.

Cattle slaughter continues at high volume on a numerical basis, but the trend is steadily toward lower yields and reduced beef tonnage. January and February delivered 25.29 per cent more cattle at the principal Western markets than during the corresponding period of 1933, the increase representing premature marketing, for which sealed corn was largely responsible. Killers got the bulk of this expanded primary movement as replacement meanwhile in feed lots was 13.9 per cent less on the same comparison basis.

Already hog slaughter has been curtailed, reflecting pig destruction last fall, also a pronounced tendency to reduce commercial breeding in many sections. The old crop of hogs, farrowed in the spring of 1933, has been closely garnered at deficient weight. The summer run of packing sows will move toward the abattoir early and, as one female in every four must be eliminated from production in compliance with government contracts, the summer pack will necessarily yield tonnage. Nature, incorrigibly perverse, has delivered a large crop of spring pigs, facilitated by an open winter in the Middle West and the fact that sows were denied access to corn, with resultant improvement in fecundity. Disposal of surplus pigs is a problem confronting owners, as the 6,000,000 that went to market last fall, involving an outlay of $30,000,000 by the federal Treasury, will be substantially increased this year by destruction on the farm.

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A.A.A. loans to corn growers are based on corn, sealed in cribs, as security. Sealed corn cannot be used until the loan is paid off. As a result, the usual situation in meats is becoming markedly altered.

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Between curtailment of cattle feeding, pig elimination and necessity for retention of ewe lambs to recuperate breeding flocks, the unprecedented meat production of 1933 will not be duplicated; probably trade statisticians a year hence will figure substantial decreases, both numerically and in the important matter of tonnage. All over the grazing area, most of the Missouri River pastures are denuded by prolonged drought, threatening further restriction in summer beef and lamb supply.

Apprehension of tribulation resulting from an impending cattle processing tax has effectively checked investment in a summer crop of cattle. This tax is regarded as an irresistible force, although far from popular. Even in Iowa, where a State gathering voted favorably, opposition is audible. At Des Moines the hook was baited with a succulent piece of pork in the shape of a recommendation to Washington to rebate to cattle feeders 25 cents per bushel on corn converted into beef since the 45-cent loan program was inaugurated. So strong is the desire for a government check that this inducement was effective in swinging votes. The proposal is preposterous, of course, and will be lost sight of in the shuffle.

As not even a semblance of a beef-process-tax plan has yet been evolved, discussion of the subject is futile. The ostensible purpose is raising funds for junking several million over-age dairy and beef cows. Taxing fat steers has the merit of novelty, but those who put them in that condition are skeptical. Such an impost would, of necessity, be placed on the backs of steers selling in the upper price brackets, in which event feeders would switch to common cattle. Process taxing of hogs was a simple affair compared with bringing cattle under the same system.

Elsewhere than Iowa, Kansas, Nebraska and possibly Texas, opportunity to adduce opinion concerning a cattle-processing tax is limited, but wherever two or three feeders gather, adverse sentiment dominates. Those voting affirmatively are invariably dairy- or beef-cow owners, commercially indigent and looking for a package of easy money.

Results of the hog-processing tax have been to curtail packer buying. Many of the smaller processors have all but suspended slaughter; the national packers have put a severe crimp in purchases at interior packing points and, if March had delivered a normal supply of hogs, a $4 market would have been doubtful. Increasing the processing tax to $2.25 per hundredweight in March automatically placed a burden on choice cuts of the carcass, restricting consumer buying, especially in the case of loins. Beef, veal and poultry competition was immediately intensified, the advantageous position of these foods becoming so apparent as to emphasize beef-tax propaganda.

NEW OBJECTIVE METHOD *to*

Chemical Method Reveals Substandard and Soaked Peas

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• Referee methods of determining quality grades of many foods are woefully lacking. Commercial grading practice today, of necessity, is all too often a matter of opinion rather than accurate measurement. Maturity of many vegetables, the most important factor in determining the grade, is exceedingly difficult to measure objectively.

• It is to be hoped that in this proposed method of designating maturity of peas on a numerical basis will be found a useful basis for future development of scientific objective grading methods.

THE QUALITY grade of canned peas is determined by giving individual numerical scores on the clearness of liquor, absence of defects, uniformity of size, flavor and tenderness, and adding them together. The resulting number shows into which grade the peas belong—whether they are fancy, extra standard, standard or below standard. All the scores given are based on personal opinion. Hence, it is agreed by all concerned that a numerical expression of the quality independent of personal judgment is highly desirable. A method to facilitate such scoring is given in the present paper.

Factors influencing the quality of a lot of canned peas of any variety may be divided into two groups: those that affect the quality of the peas in the field and, second, the shelling and canning operations themselves. From what we know about these factors today, it is obvious that under normal circumstances the quality of the pack is determined mostly by the maturity of the peas when harvested. Peas of almost any quality might be canned from the same field by choosing the proper time of harvest.

A number of attempts have been made to develop a method by which the maturity of peas in a can could be determined. Dubois[1] as early as 1910 concluded from his experiments that the determination of the total solids, crude starch, crude fiber, nitrogen, and ash cannot serve as a measure of quality, since the results obtained with raw peas and with canned green peas and soaked peas overlap to such an extent that it is impossible to draw definite conclusions. Later, Muttelet[5] proposed a method which involved the determination of sugars, starch, two fractions of nitrogen, and cellulose. By the use of certain formulas, a "maturity index" is calculated which should differentiate between peas of different quality and also between peas canned green and soaked peas. This method, however, even if dependable results could be obtained by it, would be far too involved and tedious to be of practical importance. More recently, Strassburger[6] proposed that the total-solid content of the drained peas be used as a measure of the quality. According to him, peas having over 28 per cent total solids are generally substandard. His results, however, show the same overlapping mentioned above.

Chemical studies on cannery peas have been in progress at the New York State Agricultural Experiment Station in Geneva, N. Y., since 1929. These investigations [2, 3, 4] have revealed that during ripening, when the chemical changes in the peas are in progress, there is a constant transformation in the pea of soluble materials into less soluble ones. Parallel with growth, the total-solid content of the peas also increases; consequently, the proportion of insoluble solids grows rapidly, showing the progress of ripening and hardening of the peas. It has been found that when hot 80-per cent alcohol is used as a solvent, all sugars and some other compounds are dissolved, but starch, hemicelluloses, fiber, and proteins remain insoluble. The proportion of these latter compounds increases in maturing peas; therefore, this proportion can serve as an index of maturity. In Table I the changes in total solids and alcohol-insoluble residue are shown for *Perfection* peas taken from the same field at regular intervals.

TABLE I

Percentage of Total Solids and Alcohol-Insoluble Residue in Growing *Perfection* Peas, 1932

Sieve Sizes...	Size 2		Size 3		Size 4		Size 5		Size 6		Av.
Date	Total Solids	Residue	Total Solids	Residue	Total Solids	Residue	Total Solids	Residue	Total Solids	Residue	Sieve Size
June 29.....	17.06	....	18.01	8.00	18.92	8.84	19.57	.....	.....	.....	2.06
July 1*.....	17.23	7.15	17.66	8.00	18.79	9.34	20.10	10.50	20.73	.....	3.23
July 3.....	17.12	6.84	17.29	7.75	18.15	8.50	19.59	10.56	21.00	11.70	4.08
July 5†.....	16.18	....	17.37	7.55	18.90	8.76	18.90	10.42	21.13	12.96	4.80
July 7.....	16.21	....	17.36	8.02	19.06	10.00	18.70	11.53	21.05	13.70	5.23
July 9.....	17.21	....	16.22	....	18.91	12.42	21.45	15.91	22.92	17.22	5.42
July 12.....	.....	....	23.24	....	25.01	18.76	27.25	21.85	28.70	23.52	5.57
July 15.....	.....	....	26.25	....	30.00	24.67	30.17	26.27	30.31	27.43	5.37

*2.11 in. of rain, 0.95 in. of rain on July 4. †Peas ripe for "fancy" pack.

One can see that during the whole period studied, the total solids increased at the ratio of 1 to 1.8, while the percentage of residue changed at the ratio of 1 to 4. Naturally, the latter is more suited for an index, having a much larger range of change.

It is of much interest to observe the influence of precipitation which occurred during the growing period. A rain of 2.11 in. on July 1 raised

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Determine Maturity of Canned Peas

the average sieve size from 3.23 to 4.08. This rain improved the quality of the crop, as is well expressed by the significant decrease in the residue content of all sizes except No. 5, where the decrease was small. During the period between July 3 and 7, the peas reached and passed their "prime" condition, as is well expressed by the increasing percentage of residue. The total-solid content showed much less of these changes.

How the Method Is Used

To determine the alcohol-insoluble residue in canned peas, the procedure is as follows: The contents of the can are drained through a metal screen and washed with about an equal weight of water. This is necessary because in cans which are cooked for a long time the liquor is often quite mucilaginous and, if not washed, the sample would tend to give low results. A 50-gram sample of the drained peas is well crushed and extracted in a thimble in a Soxhlet apparatus with about 250 c.c. of boiling 80-per cent alcohol. The extraction is completed when no sugars are found in a sample of the extract. This point is reached in 6 to 12 hours, depending on the rate of boiling. Afterward, the residue is dried in the thimble at 95 deg. C., for 6 hours, removed, and weighed. In Table II are presented results of determinations on commercial canned-peas samples.

The samples of commercial peas analyzed are divided into three classes, namely: of high, medium and low quality. Naturally, these classes are arbitrary; and when the new method is used for grading, the classes should be decided upon by an authoritative organization that makes a thorough study of this method, accompanied by scoring of the peas. Several samples of known quality were analyzed and it has been found that the percentage of residue gives a much better correlation with the quality and price of the samples than does the total-solid content. It should be noted that all the samples listed in the "low quality" were decidedly substandard according to the present standards for toughness, yet the total solids were in no case above 28 per sent.

In Table III are presented the results obtained on some experimental samples. All these were canned by giving them 5 minutes of blanch at

TABLE II

Alcohol-Insoluble Residue and Total-Solids Content of Commercial Canned Green Peas

Brand	Statement on label regarding variety and quality	Size	Alcohol-insoluble residue, per cent	Total solids, per cent
	HIGH QUALITY			
7 DM	Midget peas	2-3	7.42	16.29
11 S	Early garden sweet, fancy	3	8.66	15.42
41 R	Fancy sweet	3	8.74	15.16
76 DM	Early garden sweet	2-3	9.20	16.70
75 S	Sweet variety	4	9.60	16.26
46 AB	Extra sifted sweet wrinkled	3	10.20	16.42
8 GG	Great big tender	6	10.22	20.47
81 S	Early garden sweet	all	10.68	16.88
80 F	Sweet	4	12.26	19.64
35 RS	Sweet wrinkled	all	12.40	19.04
78 SV	Fancy	all	12.74	19.58
42 T	Small sweet fancy	3	12.68	19.02
86 RS	Sweet wrinkled	all	12.70	20.18
74 S	Jumbo sugar	5	12.74	19.58
13 S	Sugar	all	12.90	18.60
	MEDIUM QUALITY			
40 M	Sweet peas	all	13.28	20.61
79 R	Sugar	4-5	13.30	21.08
85 T	Selected sweet fancy	4	13.32	18.76
95 GP	*Perfection*, Extra standard†	5	13.52	18.78
36 MV	No statement	4	14.20	19.46
51 I	No statement	5	14.48	20.80
77 RR	Early garden sweet	4-5	14.80	20.26
99 R	Sugar	4	14.90	21.14
39 BV	Sweet	4	15.34	20.74
28 V	Standard quality (Canada)	4	15.44	22.72
47 W	Sifted sweet wrinkled fancy	4	16.78	21.74
27 LW	Sweet	5	17.26	23.16
12 S	Sweet	4	17.28	22.43
10 VK	Sifted early June, choice quality	5	19.77	25.31
	LOW QUALITY			
19	(Substandard *Alaska*)*	5	20.76	23.21
14	(Extra standard *Alaska*)†	5	20.77	25.73
62	(R-W, substandard)*	3	21.51	24.52
63	(A. L. W. substandard)*	4	22.62	26.60
55 HT	June fresh peas	3	23.34	25.97
64	(A. D. W. Substandard)*	4	23.54	26.84
52 HT	June fresh peas	3	23.94	.....
67	(L. R. 3 Substandard)*	4	24.50	27.58
61	(L. R. 3 Substandard)*	4	25.70	.....

*Commercial samples submitted without labels by a trade organization.
†Submitted by manufacturer.

TABLE III

Alcohol-Insoluble Residue and Total-Solids Content of Experimental Canned Peas

No.	Variety	Harvest date	Grade by scoring	Alcohol-insoluble residue, per cent	Total solids, per cent
1	*Perfection*	July 2, 1931	Fancy	11.86	17.72
2	*Perfection*	July 3, 1931	Extra standard	12.24	18.39
3	*Perfection*	July 6, 1931	Standard	19.20	23.53
4	*Alaska*	June 26, 1931	Fancy	16.38	21.40
5	*Alaska*	June 29, 1931	Standard	22.98	27.90
6	*Alaska*	June 30, 1931	Standard	23.38	27.40
7	*Surprise*	June 27, 1931	Fancy	9.84	16.54
8	*Surprise*	June 29, 1931	Extra standard	13.40	20.12
9	*Surprise*	June 27, 1931	Fancy	9.56	16.42
10	*Surprise*	June 29, 1931	Extra standard	12.44	20.24
11	*Surprise*	June 27, 1931	Fancy	11.52	18.70
12	*Surprise*	June 29, 1931	Extra standard	13.54	20.84
13	*Surprise*	June 27, 1931	Fancy	9.44	16.50
14	*Surprise*	June 27, 1931	Fancy	10.20	17.20
15	*Surprise*	June 27, 1931	Fancy	10.74	17.78
16	*Surprise*	June 27, 1931	Fancy	10.08	16.82
17	*Surprise*	June 27, 1931	Fancy	10.74	17.60

TABLE IV

Alcohol-Insoluble Residue and Total-Solids Content of Commercial Canned Soaked Peas

Brand	Statement on labels	Alcohol-insoluble residue, per cent	Total solids, per cent
48 R9-1	(Submitted by manufacturer)	23.84	27.56
73 SS	Soaked dry peas	24.12	26.86
2 I	Prepared from dry peas	24.26	27.78
45 R9-27	(Submitted by manufacturer)	24.74	27.14
44 R9-27	(Submitted by manufacturer)	24.88	.....
43 I	Prepared from dry peas	25.08	27.78
50 MF	Prepared from soaked peas	25.62	28.18
23 I	Prepared from dry peas	25.92	27.78
49 E	Soaked dry peas	26.10	30.00
9 RG	Prepared from soaked peas	26.34	28.70
68-0	Soaked dry peas, below U. S. standard	26.54	29.14
57-0	Soaked dry peas, below U. S. standard	26.58	28.80

82 deg. C. (180 deg. F.), and were processed at 118 deg. C. (244 deg. F.) for 35 minutes. In these samples there is a fairly good correlation between quality, as determined by scoring, and residue and total-solids content. It is interesting to note that, in the *Alaska* peas, on the third day of sampling, a lower solid-content was found than on the previous day, but the residue content increased during the same period. All samples of one variety were obtained from the same field. The rapid advances of the residue content can be observed in all cases. Samples 7-8, 9-10, and 11-12 were taken from the same plots on different days, while all *Surprise* samples originated from the same field from plots with different fertilizer applications. It should be borne in mind that the scorings on the three varieties are not directly comparable because of the different standards existing for early peas and sweet peas.

In Table IV, the results obtained on commercial soaked-peas samples are presented. They range from 23.84 to 26.58 per cent of residue. Note that only five samples out of eleven have a higher total-solid content than 28 per cent.

That substandard and soaked peas show a high residue content is due not only to the changes which occur upon maturing but also to the fact that, when canned, hard peas must be soaked and cooked more than ordinary fresh green peas. During cooking a part of the soluble solids of the peas is dissolved in the liquor. One might say that the peas are "extracted" during this procedure, and if they are drained and washed, a larger proportion of the alcohol-insoluble residue is left than would be found in the same peas without cooking. This also is the reason why the liquor from poor-quality and from soaked peas is often cloudy and syrupy.

New Concept of Pea Grades

The determination and scoring of the quality of canned peas requires new consideration. There is no good reason why any grade should have a different meaning because of the variety of peas used. The average consumer is not in a position to evaluate the generally quite confusing statements found on the labels, and buys and uses canned peas without regard to the variety. There should be one continuous line of grades without regard to size, variety, or any other condition.

Naturally, the new method could be used only as part of a scoring system, since factors entering during shelling and canning also have an effect on what we regard as quality of the canned product. But a numerical expression of the maturity of the peas should help materially in obtaining a scoring system less dependent upon personal opinion, seasonal changes, and differences caused by unlike standards used in different localities. Furthermore, the proposed method makes it possible to distinguish between canned green peas, on one hand, and substandard and soaked peas, on the other, on a numerical basis, independent of personal judgment.

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What Missouri Housewives Know About BRANDS

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HOUSEWIVES of the "show me" State apparently are not as familiar with brands and do not use them as frequently in buying as food manufacturers would like. A study made in the home economics department of the University of Missouri last year indicates that a large portion of housewives either do not buy foods by brand or are not familiar enough with the brand they usually buy to name it offhand. They are familiar with very few of the dozens of brands of the common foods which appear in their local markets. Only a few of them look for the brand on labels of packaged foods. And apparently those who buy by brand favor advertised brands in preference to those not advertised.

By the use of questionnaires, information was obtained from 460 Missouri housewives on farms, in small villages, and in cities of less than 50,000 population. Two-thirds of the families had incomes less than $2,000 a year. The facts obtained may be assumed to represent fairly well the actual knowledge of the housewives, since they were not given access to their pantry shelves or to other sources of information while answering the questions. It would seem that they have ample opportunity to study the foods they purchase, since almost three-fourths of them preferred to do personal shopping and over one-half preferred to select foods from grocery shelves rather than have a clerk serve them.

How Familiar Are They With Brands?

When asked to name five brands for each of a given list of foods, few of them could comply. Although brands of white flour and coffee were most familiar to them, only 20 per cent named five brands of coffee and 15 per cent named five brands of white flour. Moreover, 17 per cent did not name a single brand of coffee

and 20 per cent did not name a brand of flour. For other foods which they usually must buy if they use them—as tea, rolled oats, canned salmon, and canned pineapple—less than 5 per cent named five brands. Over one-half did not name a single brand of salmon and approximately one-fourth did not name any brand of tea or canned pineapple. One-tenth did not name a brand of rolled oats.

How Frequently Do They Use Brands in Buying?

It was assumed that if housewives were in the habit of buying foods by brand they would designate them in a market order which might be telephoned to the grocer or sent by some prunes, milk, salmon and canned lima beans.

That some of the Missouri housewives at least are conscious of brands is indicated by the fact that from 5 to 25 per cent of those studied looked for brands on the labels of packaged foods. Although this number may seem small, it is many times larger than those looking for other types of information given on the labels of the foods studied.

Whether or not foods put out under advertised brands are better than those under brands not advertised, certainly some enterprising producers have convinced Missouri housewives that the advertised brands are better. Although 46 per cent said that they did not depend on advertised brands, of the choices indicated were advertised brands. Almost one-fourth of the housewives answering the questionnaires did not make any choice.

Advertising Appears to Influence Buying Habits

The influence of advertising is shown also by the frequency with which particular brands were selected when housewives were asked to name the brand they most frequently used. One advertised brand of bacon was named 21 times by rural housewives and 57 times by the urban group, while each of the unadvertised brands was selected only approximately twice. Similarly, urban housewives used 15 brands of rolled oats but the use of one advertised was indicated 42 times and each of the unadvertised brands only once. A similar preference for advertised brands was shown in the market orders. Forty-six per cent of the orders for particular brands of flour were for two nationally advertised brands, also 87 per cent of the orders for brands of canned peaches were for two nationally advertised brands.

Not in the grocery store, but from her own home in town and on the farm, the Missouri housewife tells what she does not know about brands. Some brands click; others do not.

member of the family. However, less than one-half of the housewives mentioned brands for most of the 25 given foods when making out such a market order. Brands of baking powder, coffee and flour were indicated by 84, 61 and 54 per cent of the housewives, respectively. About 45 per cent named brands of bread and corn syrup. Brands were given by 20 to 30 per cent for oranges, canned pineapple and canned string beans. From 10 to 20 per cent named brands of apple jelly, cheese, dried while 38 per cent admitted that they did, advertised brands are much more frequently used by them than those not advertised. Apparently the fact that 87 per cent of them read the food advertisements in the magazines and about one-fourth read them in local and daily papers influences the housewives more than they think.

When they were asked to select the brands they considered "best and most reliable" from a given list of advertised, unadvertised and fictitious brands of 24 foods, 83 per cent

Irradiation Failed to Prevent Molding of Cheese

(Concluded from page 163)

the growth of mold in packaged cheese. A second factor which makes this treatment impracticable is the development of "scorched" flavor on the surface of the cheese. The flavor was not objectionable in those samples subjected to 1-minute irradiation, but in all others it was pronounced enough to attract the unfavorable comment of the casual observer.

The germicidal effect of irradiated oils, which was noted by Harris, Bunker and Milas,[2] suggests an explanation of the influence exerted by irradiation on the growth of mold on the surface of cheese. The work of these authors also indicates the possibility of applying irradiated oils to the surface of cut cheese to prevent spoilage by mold growth when transparent cellulose or foil wrappers are used.

[2]Harris, R. S.; Bunker, J. W. M.; and Milas, N. A.: "Chemical Nature of Germicidal Vapors Emanating From Irradiated Oils." *Industrial and Engineering Chemistry*, Vol. 24, p. 1181; 1932.

Definitions and Standards

*FOR FOOD PRODUCTS**

The following definitions and standards for food products have been adopted as a guide for the officials of this department in enforcing the food and drugs act. These definitions and standards include those published in S. R. A., F. D. 2, revision 3, and those adopted May 12, 1933.

HENRY A. WALLACE, *Secretary of Agriculture,*
WASHINGTON, D. C., Aug. 1, 1933

D. Condiments (Except Wines and Vinegars)

a. SPICES

The term "dried" as used in this schedule refers to the air-dried product. The term "starch" as used in this schedule refers to starch as determined by the official diastase method. In the examination of the products listed in this schedule the methods of analysis of the Association of Official Agricultural Chemists should be followed.

1. Spices are aromatic vegetable substances used for the seasoning of food. They are true to name, and from them no portion of any volatile oil or other flavoring principle has been removed.

2. Allspice, pimento, is the dried, nearly ripe fruit of *Pimenta officinalis* Lindl. It contains not less than 8 per cent of quercitannic acid (calculated from the total oxygen absorbed by the aqueous extract), not more than 25 per cent of crude fiber, not more than 6 per cent of total ash, nor more than 0.4 per cent of ash insoluble in hydrochloric acid.

3. Anise, aniseed, is the dried fruit of *Pimpinella anisum* L. It contains not more than 9 per cent of total ash, nor more than 1.5 per cent of ash insoluble in hydrochloric acid.

4. Bay leaves are the dried leaves of *Laurus nobilis* L.

5. Capers are the flower buds of *Capparis spinosa* L.

6. Caraway, caraway seed, is the dried fruit of *Carum carvi* L. It contains not more than 8 per cent of total ash, nor more than 1.5 per cent of ash insoluble in hydrochloric acid.

7. Cardamom is the dried, nearly ripe fruit of *Elettaria cardamomum* Maton.

8. Cardamom seed is the dried seed of cardamom. It contains not more than 8 per cent of total ash, nor more than 3 per cent of ash insoluble in hydrochloric acid.

9. Red pepper is the red, dried, ripe fruit of any species of Capsicum. It contains not more than 8 per cent of total ash, nor more than 1 per cent of ash insoluble in hydrochloric acid.

10. Cayenne pepper, Cayenne, is the dried, ripe fruit of *Capsicum frutescens* L., *C. baccatum* L., or some other small-fruited species of Capsicum. It contains not less than 15 per cent of non-volatile ether extract, not more than 1.5 per cent of starch, not more than 28 per cent of crude fiber, not more than 8 per cent of total ash, nor more than 1.25 per cent of ash insoluble in hydrochloric acid.

11. Paprika is the dried, ripe fruit of *Capsicum annuum* L. It contains not more than 8.5 per cent of total ash, nor more than 1 per cent of ash insoluble in hydrochloric acid. The iodine number of its extracted oil is not less than 125, nor more than 136.

12. Hungarian paprika is paprika having the pungency and flavor characteristic of that grown in Hungary.

a. Rosenpaprika, rosapaprika, rose paprika, is Hungarian paprika prepared by grinding specially selected pods of paprika, from which the placentæ, stalks, and stems have been removed. It contains no more seeds than the normal pods, not more than 18 per cent of non-volatile ether extract, not more than 23 per cent of crude fiber, not more than 6 per cent of total ash, nor more than 0.4 per cent of ash insoluble in hydrochloric acid.

b. Koenigspaprika, king's paprika, is Hungarian paprika prepared by grinding whole pods of paprika without selection, and includes the seeds and stems naturally occurring with the pods. It contains not more than 18 per cent of non-volatile ether extract, not more than 23 per cent of crude fiber, not more than 6.5 per cent of total ash, nor more than 0.5 per cent of ash insoluble in hydrochloric acid.

13. Pimenton, pimiento, Spanish paprika, is paprika having the characteristics of that grown in Spain. It contains not more than 18 per cent of non-volatile ether extract, not more than 21 per cent of crude fiber, not more than 8.5 per cent of total ash, nor more than 1 per cent of ash insoluble in hydrochloric acid.

14. Celery seed is the dried fruit of *Celeri graveolens* (L.) Britton (*Apium graveolens* L.). It contains not more than 10 per cent of total ash, nor more than 2 per cent of ash insoluble in hydrochloric acid.

15. Cinnamon is the dried bark of cultivated varieties of *Cinnamomum zeylanicum* Nees or of *C. cassia* (L.) Blume, from which the outer layers may or may not have been removed.

16. Ceylon cinnamon is the dried inner bark of cultivated varieties of *Cinnamomum zeylanicum* Nees.

17. Saigon cinnamon, cassia, is the dried bark of cultivated varieties of *Cinnamomum cassia* (L.) Blume.

18. Ground cinnamon, ground cassia, is the powder made from cinnamon. It contains not more than 5 per cent of total ash, nor more than 2 per cent of ash insoluble in hydrochloric acid.

19. Cloves are the dried flower buds of *Caryophyllus aromaticus* L. They contain not more than 5 per cent of clove stems, not less than 15 per cent of volatile ether extract, not less than 12 per cent of quercitannic acid (calculated from the total oxygen absorbed by the aqueous extract), not more than 10 per cent of crude fiber, not more than 7 per cent of total ash, nor more than 0.5 per cent of ash insoluble in hydrochloric acid.

20. Coriander seed is the dried fruit of *Coriandrum sativum* L. It contains not more than 7 per cent of total ash, nor more than 1.5 per cent of ash insoluble in hydrochloric acid.

21. Cumin seed is the dried fruit of *Cuminum cyminum* L. It contains not more than 9.5 per cent of total ash, not more than 1.5 per cent of ash insoluble in hydrochloric acid, nor more than 5 per cent of harmless foreign matter.

22. Curcuma, turmeric, is the dried rhizome or bulbous root of *Curcuma longa* L.

23. Dill seed is the dried fruit of *Anethum graveolens* L. It contains not more than 10 per cent of total ash, nor more than 3 per cent of ash insoluble in hydrochloric acid.

*Revision 4, Service and Regulatory Announcements, Food and Drug, No. 2, issued August, 1933, by Food and Drug Administration, U. S. Department of Agriculture.

24. Fennel seed is the dried fruit of cultivated varieties of *Foeniculum vulgare* Hill. It contains not more than 9 per cent of total ash nor more than 2 per cent of ash insoluble in hydrochloric acid.

25. Ginger is the washed and dried, or decorticated and dried, rhizome of *Zingiber officinale* Roscoe. It contains not less than 42 per cent of starch, not more than 8 per cent of crude fiber, not more than 1 per cent of lime (CaO), not less than 12 per cent of cold-water extract, not more than 7 per cent of total ash, not more than 2 per cent of ash insoluble in hydrochloric acid, nor less than 2 per cent of ash soluble in cold water.

26. Jamaica ginger is ginger grown in Jamaica. It contains not less than 15 per cent of cold-water extract, and conforms in other respects to the standards for ginger.

27. Limed ginger, bleached ginger, is whole ginger coated with carbonate of calcium. It contains not more than 4 per cent of carbonate of calcium nor more than 10 per cent of total ash, and conforms in other respects to the standards for ginger.

28. Horse-radish is the root of *Radicula armoracia* (L.) Robinson.

29. Prepared horse-radish is comminuted horse-radish, with or without a vinegar.

30. Mace is the dried arillus of *Myristica fragrans* Houtt. It contains not less than 20 per cent nor more than 30 per cent of non-volatile ether extract, not more than 10 per cent of crude fiber, not more than 3 per cent of total ash, nor more than 0.5 per cent of ash insoluble in hydrochloric acid.

31. Macassar mace, Papua mace, is the dried arillus of *Myristica argentea* Warb.

32. Marjoram, leaf marjoram, is the dried leaves, with or without a small proportion of the flowering tops, of *Majorana hortensis* Moench. It contains not more than 16 per cent of total ash, not more than 4.5 per cent of ash insoluble in hydrochloric acid, nor more than 10 per cent of stems and harmless foreign material.

33. Mustard seed is the seed of *Sinapis alba* L (white mustard), *Brassica nigra* (L.) Koch (black mustard), *B. juncea* (L.) Cosson, or varieties or closely related species of the types of *B. nigra* and *B. juncea*.

Sinapis alba (white mustard) contains no appreciable amount of volatile oil. It contains not more than 5 per cent of total ash nor more than 1.5 per cent of ash insoluble in hydrochloric acid.

Brassica nigra (black mustard) and *B. juncea* yield 0.6 per cent of volatile mustard oil (calculated as allylisothiocyanate). The varieties and species closely related to the types of *B. nigra* and *B. juncea* yield not less than 0.6 per cent of volatile mustard oil, similar in character and composition to the volatile oils yielded by *B. nigra* and B. *juncea*. These mustard seeds contain not more than 5 per cent of total ash, nor more than 1.5 per cent of ash insoluble in hydrochloric acid.

34. Ground mustard seed, mustard meal, is the unbolted, ground mustard seed and conforms to the standards for mustard seed.

35. Mustard cake is ground mustard seed, mustard meal, from which a portion of fixed oil has been removed.

36. Mustard flour, ground mustard, "mustard," is the powder made from mustard seed with the hulls largely removed and with or without the removal of a portion of the fixed oil. It contains not more than 1.5 per cent of starch, nor more than 6 per cent of total ash.

37. Prepared mustard is a paste composed of a mixture of ground mustard seed and/or mustard flour and/or mustard cake, with salt, a vinegar, and with or without sugar and/or dextrose, spices, or other condiments. In the fat, salt, and sugar free solids it contains not more than 24 per cent of carbohydrates, not more than 12 per cent of crude fiber, nor less than 5.6 per cent of nitrogen, the carbohydrates being calculated as starch.

38. Nutmeg is the dried seed of *Myristica fragrans* Houtt, deprived of its testa, with or without a thin coating of lime (CaO). It contains not less than 25 per cent of non-volatile ether extract, not more than 10 per cent of crude fiber, not more than 5 per cent of total ash, nor more than 0.5 per cent of ash insoluble in hydrochloric acid.

39. Macassar nutmeg, Papua nutmeg, male nutmeg, long nutmeg, is the dried seed of *Myristica argentea* Warb, deprived of its testa.

40. Paradise seed, grains of paradise, Guinea grains, melegueta pepper, is the seed of *Amomum melegueta* Roscoe.

41. Parsley leaves are the leaves of *Petroslinum hortense* Hoffm. *(P. sativum* Hoffm.)

42. Black pepper is the dried immature berry of *Piper nigrum* L. It contains not less than 6.75 per cent of non-volatile ether extract, not less than 30 per cent of starch, not more than 7 per cent of total ash, nor more than 1.5 per cent of ash insoluble in hydrochloric acid.

43. Ground black pepper is the product made by grinding the entire berry of *Piper nigrum* L. It contains the several parts of the berry in their normal proportions.

44. Long pepper is the dried fruit of *Piper longum* L.

45. White pepper is the dried mature berry of *Piper nigrum* L. from which the outer coating or the outer and inner coatings have been removed. It contains not less than 7 per cent of non-volatile ether extract, not less than 52 per cent of starch, not more than 5 per cent of crude fiber, not more than 3.5 per cent of total ash, nor more than 0.3 per cent of ash insoluble in hydrochloric acid.

46. Saffron is the dried stigma of *Crocus sativus* L. It contains not more than 10 per cent of yellow styles and other foreign matter, not more than 14 per cent of volatile matter when dried at 100 deg. C., not more than 7.5 per cent of total ash, nor more than 1 per cent of ash insoluble in hydrochloric acid.

47. Sage is the dried leaf of *Salvia officinalis* L. It contains not more than 12 per cent of stems (excluding petioles) and other foreign material.

48. Savory, summer savory, is the dried leaves and flowering tops of *Satureja hortensis* L.

49. Star aniseed is the dried fruit of *Illicium verum* Hook. It contains not more than 5 per cent of total ash.

50. Tarragon is the dried leaves and flowering tops of *Artemisia dracunculus* L.

51. Thyme is the dried leaves and flowering tops of *Thymus vulgaris* L. It contains not more than 14 per cent of total ash, nor more than 4 per cent of ash insoluble in hydrochloric acid.

● Beginning with the January, 1934, issue, FOOD INDUSTRIES **has been publishing each month the federal definitions and standards covering the principal foods. "Meat and Principal Meat Products," "Milk and Milk Products," "Grain Products," "Fruits and Vegetables," and "Sugars and Related Substances" have been covered. The remaining sections will be published as rapidly as available space will permit.**

● Regardless of what happens to the Copeland Bill (S.2800) or other food and drug bills now before Congress, all food manufacturers should be familiar with the existing advisory definitions and standards. They are likely to become mandatory when a new food and drug law is enacted.

● Study them and see if they can be improved and that they cover the foods you manufacture. Make your recommendations to the Food Standards Committee of the Department of Agriculture. Also, be prepared to attend the public hearings that will follow the enactment of a new law and to take a hand in formulating definitions and standards for the foods you do or may want to manufacture.

● Copies of these definitions and standards can be obtained from the Department of Agriculture. Address your request to W. S. Frisbie, Chairman, Food Standards Committee, Food and Drug Administration, U. S. Department of Agriculture, Washington, D. C.—Editor.

Some Pertinent Pointers on
Training Truck Drivers

PERHAPS you have heard the story of the witness in the bootleggers' trial who was asked if he noticed anything peculiar about the big truck carrying the liquor and replied, "Yes, it wasn't in the middle of the road." This story was quoted recently in an address before the Motor Truck Club of Massachusetts by George H. Scragg, manager of the national sales division of the Brockway Motor Co., Cortland, N. Y. It is repeated here because it indicates a certain public opinion and because it points the way to large truck operators in the food field as to why greater care should be given to the training of their truck drivers.

References Are Not Enough

As Mr. Scragg further pointed out, too often truck drivers are hired on references which indicate them to be honest, conscientious and moderately skilled in the operation of trucks. This skill is understood to include the ability to start and stop with even acceleration or deceleration; to change gears properly; to avoid riding the clutch or rubbing the rear tires against the curb; to avoid racing his engine or other trucks on the road; to be a good judge of distance; to steer a straight course on the road and to be able to maintain a uniform rate of speed.

Supposedly endowed with the above qualifications, many a driver is hired and told to drive safely. In some cases he is told to drive courteously. Left to his own resources, he is guilty of many bad habits which, taken collectively, have served to build up an antagonistic public opinion against all truck drivers.

This antagonistic public opinion is made up largely by the feelings of those passenger-car operators or owners who are constantly annoyed by truck drivers. The latter's actions are laid to arrogance, whereas in most cases they are due to ignorance.

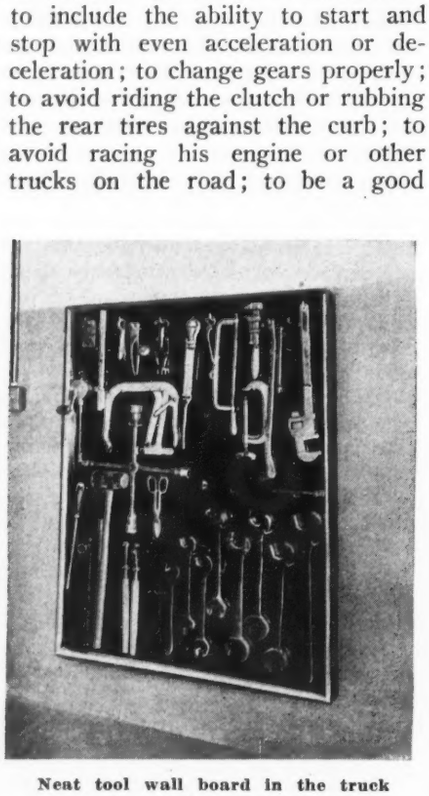
One of the most common acts of thoughtless or untrained drivers is to get out in the center of a road only wide enough for two vehicles to pass. This makes it impossible for passenger cars to pass. Is it any wonder that many bills are introduced in State legislatures each year to limit truck widths?

Or have you ever come to the bottom of a hill only to find ahead of you a line of trucks going up the hill in lower gears and so close together that you can't pass by one of them at a time but have to wait until the entire string has reached the top of the hill? If you have, you realize why hundreds of bills have been introduced by State legislators in recent years to reduce the over-all lengths of trucks and tractor semi-trailer outfits.

Another prevalent practice is that of truck drivers cutting corners in taking curves; that is, they do not maintain the same radius when rounding a curve. They may be out in the center of the road when they start to make the turn and be on the edge of the road or up against the curb at the middle of the curve. Such a course may force other vehicles off the road.

Restrictive Laws Costly

Whenever laws are passed which restrict truck widths, lengths or speeds, they indirectly result in increased transportation costs, because they reduce the loads which can be carried and the number of trips which can be made in a given time. Hence it is of vital interest to transportation executives in the food field to improve the training of their truck drivers and to make certain that this training includes more than the manual operations of steering; starting and stopping; gear changing and brake application.



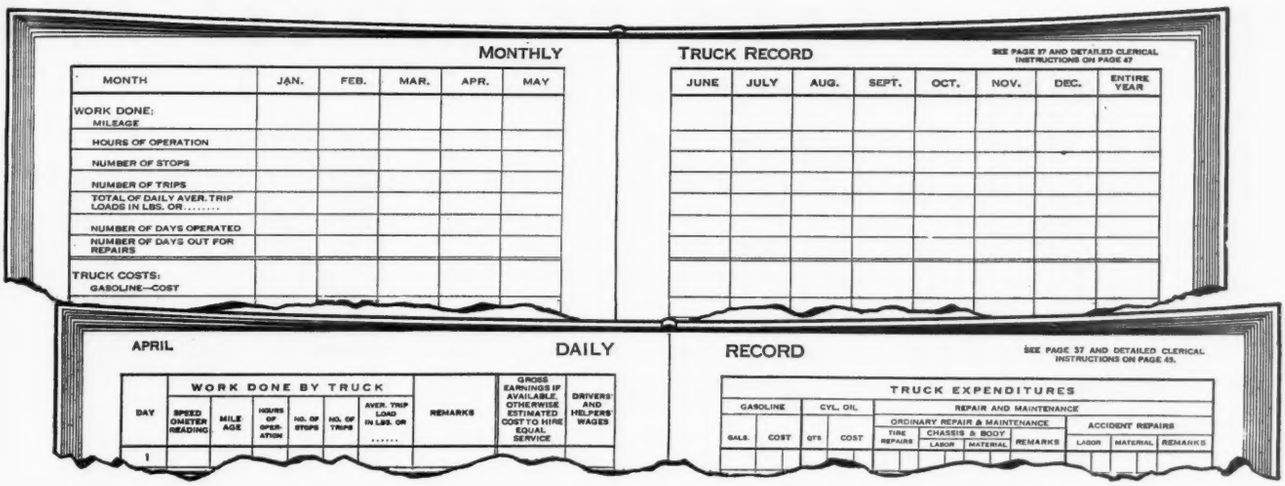
Neat tool wall board in the truck repair shop of M. Augenblick & Bro., Inc., Newark, N. J.

TOOL NEATNESS
Indicates Motor Truck Care

THE CARE with which a shop mechanic keeps his tools is a dead give-away on the way he does his work. Ninety-nine times out of a hundred it is also the surest and quickest means of judging the mechanical condition of the trucks or cars intrusted to his care. All one has to do is walk through a shop.

If tools are scattered all over the place—on the floor, on the bench or on the running board—it is a safe bet that the mechanic is sloppy and does sloppy work. You also probably will find oil and grease on the floor along with discarded parts and greasy waste and rags.

It is thus a pleasure to find a truck shop in the food field in which the mechanic keeps his tools in such a neat manner as shown in the accompanying illustration. It shows the wall tool board in the shop of M. Augenblick & Bro., Inc., Newark.



MONTHLY

MONTH	JAN.	FEB.	MAR.	APR.	MAY
WORK DONE: MILEAGE					
HOURS OF OPERATION					
NUMBER OF STOPS					
NUMBER OF TRIPS					
TOTAL OF DAILY AVER. TRIP LOADS IN LBS. OR.....					
NUMBER OF DAYS OPERATED					
NUMBER OF DAYS OUT FOR REPAIRS					
TRUCK COSTS: GASOLINE—COST					

TRUCK RECORD

SEE PAGE 37 AND DETAILED CLERICAL INSTRUCTIONS ON PAGE 47

JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ENTIRE YEAR

APRIL DAILY RECORD

SEE PAGE 37 AND DETAILED CLERICAL INSTRUCTIONS ON PAGE 45.

DAY	WORK DONE BY TRUCK: SPEEDOMETER READING	MILEAGE	HOURS OF OPERATION	NO. OF STOPS	NO. OF TRIPS	AVER. TRIP LOAD IN LBS. OR	REMARKS	GROSS EARNINGS IF AVAILABLE, OTHERWISE ESTIMATED COST TO HIRE EQUAL SERVICE	DRIVERS' AND HELPERS' WAGES
1									

TRUCK EXPENDITURES											
GASOLINE		CYL. OIL		REPAIR AND MAINTENANCE							
				ORDINARY REPAIR & MAINTENANCE					ACCIDENT REPAIRS		
GALS.	COST	QTS	COST	TIRE REPAIRS	CHASSIS & BODY: LABOR	CHASSIS & BODY: MATERIAL	REMARKS		LABOR	MATERIAL	REMARKS

Two of the principal forms of the Dodge Bros. cost system book designed to provide adequate records for the owner of a single truck.

Simple Operating Record

For Single Trucks

SHOULD readers of FOOD INDUSTRIES have criticized previous descriptions of truck cost systems appearing on these pages on the ground that they were used only by large fleet owners, the pendulum swings all the way in the opposite direction in the cost forms illustrated above. They are part of a system designed to provide adequate records to meet the need for facts regarding his truck operation by the owner with a single vehicle.

The two forms, shown in part, comprise the two principal records of a cost system furnished gratis in book form by the Dodge Bros. Corp., Detroit. The lower form of the two shown provides space for a complete day-by-day record of operation for one month. The upper form permits the individual monthly records to be combined into a yearly summary for one truck. If two trucks are owned, two books are used.

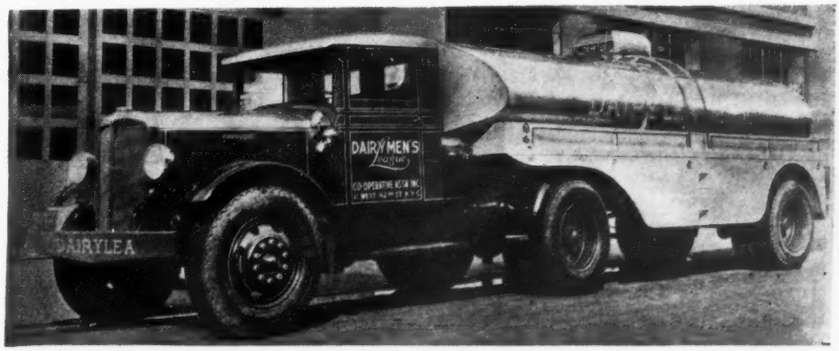
Other forms included in the book are a Tire Depreciation Record, a Monthly Reserve Balance Record, an Indirect Costs Record, a Maintenance Mileage Record, a Yearly Record and Analysis of Performance, and a Monthly Record of Profit and Loss.

In working out the system, an attempt has been made to reduce the amount of clerical work to a minimum. To assist the owner to compile the records properly, brief directions are given as to how and when to start each record. Furthermore, detailed clerical instructions are given to cover each individual form and how each line is to be entered or calculated.

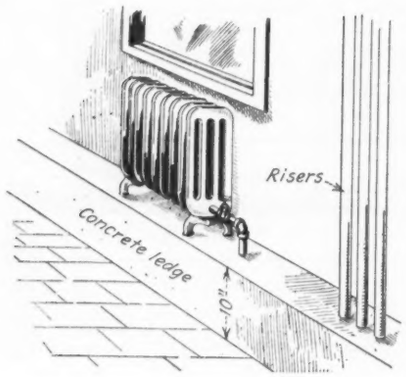
Two of the unusual forms not included in most cost systems are the Monthly Reserve Balance Record and the Monthly Record of Profit and Loss. The former is designed to help the individual owner to set up a reserve for those expenses which occur only occasionally and finally to have sufficient cash to purchase a new truck when the present one is worn out or disposed of. The reserves set up are to cover repairs and truck and tire depreciation.

Stability of Front Wheels Taken Up Before S.A.E.

THE TENDENCY of large fleet operators in the food field to carry a larger percentage of the truck's load on its front axle, in order to take advantage of existing State laws, has brought forth the need for further study of the subject of front-wheel stability from an engineering viewpoint and in the interest of public safety. The many variable factors which contribute to front-axle stability were brought out in an address by Walter A. Olen, president and general manager of the Four Wheel Drive Auto Co., of Clintonville, Wis., at the annual meeting of the Society of Automotive Engineers, to be published soon in the *S.A.E. Journal.*



A milk tanker that has a capacity of 3,000 gal. It consists of a 12-cylinder Brockway tractor and a semi-trailer with a tank made by the York Ice Machinery Corp., York, Pa. The tank is made of 10-gage chrome-nickel alloy steel insulated with 2-in. corkboard and covered on the outside with a ⅛-in. aluminum casing with natural finish.



Sanitary Guards for Risers

In factories, the custom is to place riser pipes, radiators and the like along the walls. The practice is good, but the arrangement often is distressing to the food-plant manager who wants to keep his factory clean. To keep the débris, dust and mop waters from behind these pipes requires as much time as scrubbing.

In plants with masonry floors and walls, much worry can be avoided by adding at the base of the walls a ledge about 10 in. high and wide enough for radiators. This not only will lift the riser-pipe floor junctions and radiators above the floor-dirt and mopping area but it will act as a bumper for hand trucks.

HARRY STINER, *New York, N. Y.*

Raises Trucks to Car Level

Anyone having to load freight cars from a floor below the level of the car will find a great labor and time saver in the motor-driven loader constructed and used by my company. This loader consists of a portable ramp with a power-driven link chain that hauls loaded trucks of the four-wheel type up the incline. Driven at a speed of 48 ft. a minute, the chain travels in a U-shaped metal track and around a drive sprocket and two idler sprockets. Power is supplied by a 5-hp., 500-r.p.m. motor through a belt and a set of internal spur gears with a ratio of about 10 to 1.

In operation the truck is drawn to the foot of the loader, where a special handle is slipped over one side of the crosspiece on the end of the tongue. Then the truck is pulled up the ramp far enough for the handle to engage in the moving chain, which propels the load up the incline to a level platform. At the end of the track the handle disengages from the chain automatically and the truck is drawn into the car.

The special handle is made from a piece of 1-in. pipe and a tee, the tee being screwed onto the pipe and pinned to prevent turning. The other end is flattened and notched so that it will catch in the chain. There is a tendency for the special handle to push the tongue of the truck upward, but this is easily counterbalanced by holding the tongue down.

The frame, runway and platform of the loader all are of wood, the runway being solidly boarded on each side of the metal track. Wheels on the forward supports permit the loader to be moved to different loading points.

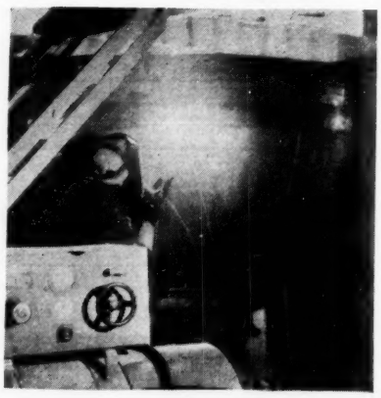
This loader has handled loads up to 1,400 lb. One of the big advantages of the device is that it permits goods to be trucked directly into the car. H. A. PRATT, *Williamson, N. Y.*

Soap Leakproofs Joints

No little difficulty is encountered in keeping leakproof the joints of lubricating systems on industrial machinery. However, this may be accomplished by applying ordinary laundry soap to the threaded joints and to the gaskets in these systems.

Soap has the advantage over the more commonly used shellac of remaining soft in the joint, whereas shellac eventually hardens and cracks. To use the soap, cut the cake in half and dig the soft soap from the interior.

S. H. COLEMAN, *Waynesboro, Va.*

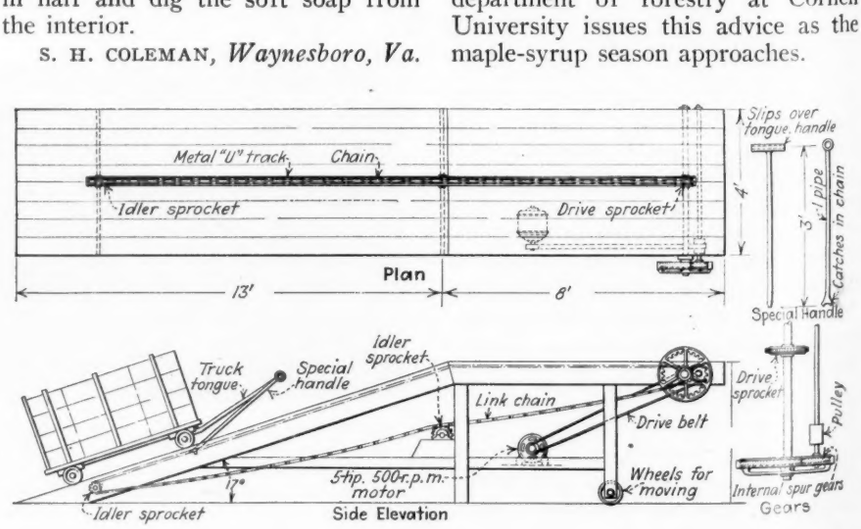


Stretching a Steel Vessel

A Milwaukee brewer more than doubled the capacity of his brew kettle by cutting it in two horizontally, elevating the upper section and inserting four 66x84-in. sheets $\frac{3}{16}$ in. thick. These were lap-welded over the exterior of the original sections of the kettle and butt-welded to each other, the welding being done with an electric arc.

Maple Syrup Must Be Hot

Perhaps the most important factor in obtaining the proper color in maple syrup is speed in reducing the sap to syrup. The modern evaporator with its corrugated bottom allows for the greatest heat contact with the boiling syrup and aids greatly. But even the most up-to-date evaporator gives darker syrup unless the greatest amount of heat is present at all times in the arch, or firebox. If wood is used as fuel, it must be dry and seasoned to give sufficient heat. The department of forestry at Cornell University issues this advice as the maple-syrup season approaches.



Pressing Problems

Food industries face numerous pressing problems. Many of these originate in Washington. They deserve particular attention now, as national policies are being formulated that are likely to govern industrial operation for some time to come

Raw Materials

● Food manufacture is much concerned with any A.A.A. policies affecting farm products that are processed into food. A.A.A. has reverted to a farm-relief agency, concerning itself primarily with securing better prices and a stable future market for agriculture. Allocation of canned goods production for this year has been abandoned as a means to that end. From the standpoint of the food manufacturer this is good news (see FOOD INDUSTRIES editorial of March, page 98, and news on p. 182, this issue).

Codes

● Code making under N.R.A. is progressing more rapidly than under A.A.A. Numerous hearings have been held in the past month; many more are scheduled. Some feelings are being hurt, but the benefits outweigh the bruises.

No one now believes that code making or code enforcement is merely a temporary emergency thing. Even if N.R.A. in its present form break down and be abandoned, some equivalent of trade-practice control seems clearly indicated as a definite outcome of the New Deal. The element of permanence adds to the importance of careful code making.

Copeland Bill

● The re-re-revised Copeland bill as reported to the Senate is nearer than ever to a workable measure, farther than ever from Tugwellomania. Debate in the Senate may produce further amendment, either good or bad. There is no likelihood at present that this bill will become a law during this Congress. But all steps taken this year are likely to be retaken in the next Congress rather quickly.

Sugar

● Sugar legislation seems more remote than a month ago. The whole mess has fermented badly. Enactment of legislation fixing production quotas as requested by the administration is not likely. Too many Senators of Western States cannot accept it with political safety. There is a sharp difference in the viewpoint of agricultural leaders, some of whom would cast to the wolves of competition all domestic sugar production, which they allege is exotic.

Sugar planning that is not feasible by direct legislation might conceivably be accomplished by marketing agreements or code adoption, or by foreign tariff trading if the President is given authority to manipulate tariffs for trade purposes.

Tariff Bargains

● Tariff adjustments as bait for trade agreements are necessary. President Roosevelt's request for authority to adjust tariffs, within the 50-per cent limit, up or down, when trade advantages may thereby be gained, seems likely to be approved by Congress. Limitation of the conditions under which tariff adjustments can be promised may be imposed before the bill finally is enacted. However, the authority probably will be great enough to permit extended negotiations.

Quasi-Nationalism

● Secretary Wallace's middle-of-the-road comment on international relations seems to be gaining acceptance in Washington. It probably is as near to a definition as can now be given of the public policy of the New Deal administration. He urges a middle course between ultra-nationalism and extreme internationalism. Either extreme is highly hazardous.

But a clear definition of the objective does not chart the course or furnish transportation. Wallace's statement must be used as a gage of objectives sought rather than of methods to be used.

"Basic" Commodities

● Cattle are almost sure to be added to the list of basic commodities—and soon. Sugar and peanuts are next. Action on sugar, however, hinges on developments involved in the quota-law making. Peanuts will be added primarily to secure votes of Southern States, which have to have some reward for helping the cattle ranches and beet fields of the West. Log-rolling on these measures got so bad that Huey Long was inspired to add even sassafras to the list of commodities further to be relieved.

All production-control programs must be viewed through the pre-election microscope, which magnifies to proper proportions the importance of getting cash distributed to farmers at a time when votes are needed by 467 Congressmen seeking reelection. At no other time could these relief measures command even approximately as much support. The administration, using this leverage, may find its budget troubles hoisted high on an unwanted teeter-totter as Treasury raids continue in terms of hundreds of millions of dollars. All of us, including the food industries, will pay the bill.

Packer Troubles

● Procedure by Secretary Wallace against packers in the South for alleged price-fixing conspiracies is regarded by some as merely a gesture to speed up cooperation on the marketing agreement. No early consequences in meat-price changes or fundamental modification in meat-marketing practice are expected.

Vegetable-Oil Tax

● To protect food oils and fats from foreign competition, new taxes are to be imposed on certain imported oils. These are not known as tariffs but are exactly equivalent. They will bear, if enacted, most heavily on soap and non-food fat users. General support in Congress has been assured under the thinly masked plan of agricultural aid.

Crop Control

● A.A.A. relief measures are likely to be strengthened in two ways before the close of the present Congress. Passage of the Bankhead cotton-control plan by the House implies an almost compulsory cooperation for that commodity. If the scheme works for cotton, a like regimentation of farmers producing other basic agricultural commodities is sure to follow, but not in this session.

THINGS HAVE HAPPENED: Dairy picture changes as Wallace announces new plan . . . Factional fights for favors revamp sugar legislation . . . More industries have trade practices altered by codes . . . Canners win point on marketing agreements . . . Confectioners' problems appear to be many . . . I.C.C. threatens private refrigerator cars

AAA Dairy Program Provides Benefit Payments, Processing Taxes

Seventh and last of the production-control programs covering basic agricultural commodities specified in the Agricultural Adjustment Act is the plan offered to dairy farmers by A.A.A. The plan does not call for any reduction from the volume of production in recent months but anticipates the annual milk freshet which lies ahead and the peak in the cow cycle, some time within the next year, by offering farmers who reduce sales 10 per cent to 20 per cent from their 1932-33 average benefit payments of 40 cents for each pound of butter fat knocked off, or about $1.50 on each 100 lb. of surplus fluid milk.

A.A.A. has put $165,000,000 back of its offer and is prepared to raise the ante to $300,000,000 if Congress adopts the pending bill to include dairy and beef cattle. The original outlay will be covered by a processing tax on butter fat starting at 1 cent and gradually advancing to 5 cents a pound, as supply is brought under control, with a compensatory tax on oleomargarine.

Dairymen will be left to choose their own method of reducing production, but $225,000 has been set aside for missionary work in converting them to what the A.A.A. regards as the best-paying methods. Suggested are shift from grain to pasture feeding, the sale of cows to cowless farms for family needs, shortening the milking season and, as a last resort, slaughtering to bring down the cow population, now exceeding 26,000,000, the largest on record. A.A.A. is well aware, however, that extensive slaughtering will aggravate the beef-cattle situation.

To Buy Surplus Milk

Disclaiming any desire to force the program on the farmers, A.A.A. offcials will talk it out with them in a series of regional meetings, after which consideration will be given to proposals for modification, particularly in adapting the plan to regional conditions.

An allotment of $5,000,000 to speed up conquest of bovine diseases is included, as a supplementary feature of the program. Another $5,000,000 will be set aside to purchase surplus milk for underfed children in cities, in addition to present expenditures by the Federal Emergency Relief Administration. A.A.A. estimates that 100,000,000 pints can be supplied to undernourished children this summer.

A.A.A. believes farmers should drink more milk and $5,000,000 is earmarked to buy healthy cows and sell them to needy farmers on easy credit terms. There are 1,500,000 cowless farms supporting 7,000,000 people; 68 per cent of them in the South.

In order to get started on production control, A.A.A. is pushing forward rapidly with negotiation of fluid-milk-marketing agreements. The agreements cannot of themselves bring high prices on fluid milk while butter fat prices scrape the bottom, due to excessive supplies. But concentration on increasing prices to farmers and reorganization of the dairy section are showing results lacking when A.A.A. tried to spread itself over the whole field from producer to consumer. Several of the new agreements include, however, minimum resale prices in order to protect producers' prices from the competition of other dairy products.

Licenses covering several major markets provide for reduction or elimination of service charges frequently collected from farmers. Probably the most important feature of the new licenses is the provision for pooling all milk shipped into a city market. Distributing companies are required to pay for the milk according to the use made of it and according to the price schedule called for in the license.

Licenses issued during the past month include Boston, New Orleans, Kansas City, Wichita, St. Louis, Omaha-Council Bluffs, Lincoln, Sioux City, Evansville and Indianapolis.

It now seems likely that the A.A.A. will not move into the milksheds of the metropolitan district of New York, which includes parts of at least three States, owing to the inability or reluctance of the State milk control boards of New York, New Jersey and Pennsylvania to forego the right of price-fixing for retail distribution.

Sugar Bills Undergo Operations As Factions Fight for Favors

While the administration's sugar legislation has been stalemated in Congressional committees for some time, indications are that it will be reported out and passed within a short time with several major changes. Prospective changes are, in a broad sense, as follows: writing of specific quotas into the legislation, at least the domestic allotments; some restriction on imports of direct consumption sugar; and a higher quota for domestic beet-sugar producers.

The House Agricultural Committee has been revising the legislation to provide higher quotas for continental and territorial producers and cuts for Cuba and the Philippine Islands. Senator Walsh has offered an amendment that would limit imports of "direct-consumption sugar" from Cuba to 15 per cent of her raw-sugar quota and restrict imports from territories and insular possessions to their 1933 shipments. Senator Vandenberg has introduced an amendment to limit the legislation to two years, provide for the return of the present sugar tariff when the processing tax is lifted, and give domestic producers quotas equal to existing plant capacity.

Limitation of direct-consumption imports appears highly probable. While Secretary Wallace is not favorable to such action, he is represented as not openly opposing it. The question probably will resolve into politics alone, and domestic refiners appear to have the upper hand now. There is, however, within the administration itself, a strong sentiment favorable to Cuban refinery interests.

Sugar states Congressmen are expected to insist upon writing quotas into the legislation because of the unsympathetic attitude of the A.A.A. toward domestic sugar production. Informed circles here are of the opinion that the domestic sugar interests would

ng. regard the administration proposal half as much askance if it were not for the previous connections of high officials of the A.A.A., which will administer the program. The farm relief body, evidently worried at the lack of action and the friendly sentiment in the Congressional committees toward domestic producers, has turned loose a broadside under the signature of Secretary Wallace carrying the implied threat of a reduction in the tariff on Cuban sugar unless the administration proposal is accepted.

While Secretary Wallace is understood to be almost unalterably opposed to increasing the domestic sugar quota, President Roosevelt may compromise with militant beet State Democrats. The compromise figure mentioned is 1,550,000 short tons, an increase of 100,000 short tons over the figure suggested for beets in the President's message. House beet State representatives have sought as high as 1,677,000 short tons.

Court Rules Sugar Institute Must Be Restrained

In what the government considers the most important anti-trust decision since the dissolution decree against Standard Oil Co. in 1911, federal Judge Julian W. Mack early last month ruled that the Sugar Institute, Inc., must be restrained from price-fixing activities. However, the judge held that the institute need not be dissolved, since it can be of real service to the sugar industry. Judge Mack's decision, a 100,000-word document and one of the longest ever filed in federal court, followed a long and extensive legal battle which began in February, 1932, and involved the presentation of more than 10,000 pages of testimony. But the end is not yet, for the institute and its fifteen large cane-sugar refiners expect to appeal the case to the Supreme Court and again go through the lengthy presentation of evidence.

That the problems which confronted the sugar refiners and which they had attempted to solve through the operations of the Sugar Institute were neither fancied nor slight, Judge Mack observed in his voluminous opinion. But, he ruled, the sugar companies had gone much farther than was necessary to eliminate secret competition, fraud and waste in the industry. "Though the refiners have claimed that their aim had been to clean up unfair competitive situations in their industry," the judge said, "it is clear that their dominant aim was to preserve uniformity in price structure and to maintain relatively high prices, to relieve themselves of burdensome competitive devices and to make certain that no secret concessions would be given."

If the refiners go under a code whose provisions conflict with this anti-trust decision, the decree will be modified to conform with the code.

Supreme Court Upholds New York Milk Law

Growing out of an insignificant fine of $5 against a Rochester (N. Y.) milk dealer, a Supreme Court decision of vital importance to the administration's dairy plan and to the recovery program in general was handed down by the Supreme Court on March 5. In judging this case, brought to it through appeal from the lower court, the Supreme Court ruled that New York State had the right to fix milk prices. "Neither property rights nor contract rights are absolute," the court ruled, adding that "equally fundamental with private right is that of the public to regulate it in the common interest."

The Supreme Court not only upheld the authority of federal and State governments to fix prices but warned the courts that it was not part of their function to determine the economic policy of the State.

Another decision with an important bearing on the recovery program was a ruling by the Federal Trade Commission in the case of Sturtevant Ice Cream Co., Rock Island, Ill. The Commission held that it had no power to interfere with the operation of the evaporated-milk-marketing agreement which limited the price range to 15 cents when the Sturtevant company said that small producers had as much as a 25-cent range.

A. H. LAUTERBACH

New head of the Dairy Section of A.A.A., who began his duties March 10. Mr. Lauterbach is manager of National Cheese Producers' Federation, Plymouth, Wis., and has been actively associated with cooperative dairy marketing for more than fifteen years. Part of that time he was connected with Land O' Lakes Creameries, Inc., Minneapolis.

Five More Food Codes Approved; Others Move Toward Completion

Maintaining the increased pace in handling food codes, N.R.A. and A.A.A. during the past month approved codes for the mayonnaise, brewing, tapioca, and fresh oyster industries and for the grain exchange. Meanwhile hearings were held on codes for the grocery, ice cream cone, cocoa and chocolate, candy, soft drink, wine and flavoring manufacturing industries. Other hearings covered imported green olives, wholesale and retail confectionery, stockyards and food workers.

Approved March 22, the mayonnaise code provides a 40-hour week, with exceptions, and minimum wages of 40 cents an hour for men and 32½ cents for women, with a 5-cent differential in the South. Weekly minimum scales range from $16 to $18. The effective date, March 31, is stayed 10 days, and there is a 60-day stay of the waiting period between the filing and effective date of price schedules and terms of sale.

The labor provisions of the brewing code, approved March 22 with a 10-day stay after the effective date of April 2, place all labor on a 40-hour week with a 14-week peak period in which 48 hours per week is the maximum. During the peak period, office employees will be paid time and one-third for overtime and other employees time and one-half. Office employees will receive a minimum of $16 a week and other workers not less than $18.

The final drafting of the baking code is reported to be under way, and an early understanding on disputed points is expected. Consignment and premium selling provisions probably will go into the final draft in the form presented in the proposed code. Open-price claims await determination of general N.R.A. policy. A compromise on a 40-hour week is expected for machine shops, with longer hours for small hand-craft shops.

Differences between the industry and N.R.A. on labor provisions have brought about a deadlock on codes for all branches of the confectionery industry, except wholesalers. Approval of the wholesalers' code is expected soon.

The code for the distribution functions of the grocery manufacturing industry came up for hearing March 26 in a form that bore little resemblance to the original document. And many in the industry were not satisfied with it. Some believe they should have separate codes. Armin Riley, who is in charge of N.R.A. food codes, believes manufacturers and distributors should operate under the same trade practices and the same general wages and hours so that

there won't be separate code provisions "for all the products on the grocery shelf."

At the hearing early in March for the bottled-soft-drink industry, discussion centered on price stabilization, hours of labor and production costs. The industry still feels that without price stabilization, unfair trade practices cannot be eliminated. In regard to labor, a differential in hours was opposed by one representative from the South. Testimony on cost control stressed the fact that the industry has a definite economic roof—the 5-cent price. If higher production costs boost the price above this level, much of the demand for soft drinks will vanish, the industry believes.

Meat packers appearing at the hearing on the stockyards code on March 2 defended direct buying, testifying that this practice was the economic method of handling meat products. But the stockyards operators charged the packers with being able to buy at private yards and concentration points without any check on their weighing, grading, docking and other practices. And they asked for federal weighing and grading in yards handling more than 250 hogs daily.

Many Code Problems Beset Candy-Manufacturing Industry

Wage differentials, code authority representation, production control, premium selling, and price policies constituted the controversial points of the candy manufacturing code, heard under N.R.A. on March 13.

Opposition to and criticisms of sections covering these points were spirited and had noteworthy backing even though the sponsor, National Confectioners' Association, represents 85 per cent of the dollar sales volume of the wholesale candy manufacturing industry (the industry is defined to exclude manufacture of cocoa-bean products known as "cocoa" and "chocolate," including solid chocolate with added fruits and/or nuts).

Charles Klein, representing 105 candy manufacturers in metropolitan areas, considered wage differentials based on population to be an unfair trade advantage for concerns situated in low-population areas. He cited that out of a total of 98 manufacturing codes approved by the President only 3 provide for population differentials in wages. Miss Annetta Dieckmann (Woman's Bureau, U. S. Department of Labor) asked for time and one-half for over 40 hours per week up to a maximum 48-hour week as a way of enforcing a shorter work week and getting more reemployment and protested against differentials for learners, sex, and geographical location.

Dr. R. M. Woodbury, Labor Advisory Board, held for a peak period not to exceed six weeks in any calendar year.

Mrs. Mary W. Dewson, National Consumers' League, advocated time and one-third for all over 40 hours per week, elimination of long work weeks for peak periods, minimum wage of 35 cents per hour with no differential on learners, sex, or population basis.

Attack upon code authority representation came from several sources. Carleton L. Fisher, Fred W. Amend Co., Danville, Ill., as spokesman for about 30 wholesale candy manufacturers, contended for election of all seven members on the basis of a volume-of-production weighted vote and that the five geographical zone boundaries be determined on a volume-of-production basis.

H. H. Campbell, Standard Candy Co., Nashville, Tenn., desired a unit vote for each member of the industry regardless of size.

C. H. Woodwood, John G. Woodward & Co., Council Bluffs, Iowa, asked for the retention of the fourteen geographical zones defined in N.C.A., Inc., bylaws and selection of the six elective members to be on the basis of one vote for each member of the industry. V. L. Price, National Candy Co., St. Louis, proposed that three of the six elective members be chosen by N.C.A., Inc., and three by members of the industry who have assented to the code regardless of association membership or affiliation; at least one of the six may be a non-member of N.C.A. and at least one to represent a sales volume of less than $200,000 during the calendar year next preceding the election.

S. B. Goldman, legal division, stressed provision for the appointment of a trade practice committee under the code to meet with trade practice committees appointed under other codes of related industries to formulate fair trade practice to govern relationships between production and distribution employers.

Price policy disagreements were checked by the statement of Assistant Deputy Taft that an administration committee was studying the effect of "open-price" plans and that any provision for such policies in the code would necessarily have to conform with the decision reached by the administration committee. Nevertheless, presentations were made and briefs filed relative to the "open-price" provision. The chief objection by volume producers to the open price is that they do not want their competitors to get access to their cost figures directly or indirectly and thus learn the margin of profit on which their business is run, nor do they want to supply information to retail buyers which will enable these buyers to play one wholesale seller against another.

In opposition to the use of premiums in connection with the sale of candy, Daniel D. Sanford, National Licorice Co., Brooklyn, and Carleton L. Fisher made presentations. E. M. Kerwin, E. J. Brach & Sons, Chicago, supported their use to further the sale of candy in dull periods of the year. Speaking in behalf of 21 companies, he stated that their sales, using premiums, for 1933 amounted to $19,000,000 and that his own company in the past nine years had used $1,107,000 worth of such premiums, which amounted to less than 2 per cent on their sales.

Code Opposes Multi-Shifts

Although the proposed code provides for the limiting of production by specifying against multi-shift operation, the administration is on record as opposed to the inclusion of such a clause. Mr. Milch, Elbee Chocolate Co., Inc., Brooklyn; W. P. Redding, Denver, Colo., and Brooks Morgan, Block Candy Co., Atlanta, Ga., submitted briefs and data showing that multi-shift mass production had resulted in an overproduced condition in the industry; that one-shift factories have been forced out of business, with a resulting decrease in employment; and that between 100 and 200 candy plants are now on the verge of

WHERE CODES STAND

APPROVED

Beet Sugar Industry (Labor Provisions)	Oct. 27	NRA
Brewing Industry	Mar. 22	NRA
Chewing Gum Manufacturing Industry	Jan. 30	NRA
Coffee Industry	Feb. 6	NRA
Fishing (Master Code)	Feb. 26	NRA
Fresh Oyster Industry	Mar. 10	NRA
Grain Exchanges	Mar. 20	AAA, NRA
Imported Date Packing Industry	Nov. 11	NRA
Macaroni	Jan. 29	NRA
Mayonnaise Industry	Mar. 21	NRA
Raw Peanut Milling	Jan. 12	NRA
Retail Food & Grocery Trade (Labor Provisions)	Nov. 15	NRA
Retail Trade — Fair Trade Practices	Oct. 21	NRA
Southern Rice Milling Industry	Nov. 21	AAA
Tapioca Dry Products Industry	Mar. 12	NRA
Wholesale Food and Grocery Trade	Jan. 4	NRA
Wholesale Food & Grocery Trade (Labor Provisions)	Nov. 15	NRA
Associated Industries		
Can Manufacturers' Industry	Dec. 15	NRA
Canning & Packing Machinery	Jan. 27	NRA
Cap & Closure Industry	Oct. 20	NRA
Crown Manufacturing Industry	Nov. 1	NRA
Merchandise Warehousing	Jan. 27	NRA
Packaging Machinery Industry & Trade	Oct. 31	NRA
Fiber Can & Tube Industry	Feb. 25	NRA

being shut down, with consequent loss of employment for 10,000 to 20,000 of the 50,000 people now engaged in the candy industry. Mr. Morgan asserted that 95 per cent of the candy industry in the United States want production control.

In post-hearing conferences the candy manufacturing industry is reported to be resisting requests of the recovery administration for a revision of the labor provisions setting a maximum 40-hour week and a 40-cents-per-hour minimum wage. N.R.A. wants 36 hours a week and 45 cents an hour as part of the program requested by President Roosevelt in his appeal for extension of the recovery law.

Chocolate Manufacturers Want 14-Week Peak-Production Period

Argumentative presentations relative to labor and peak-production period problems marred an otherwise model public hearing held March 12 under N.R.A. on the cocoa and chocolate industry code.

Request by J. D. Warfield, Warfield Chocolate Co., Chicago, that packers of cocoa be included in the industry and made subject to the terms of the code brought from W. K. Wallbridge, Peter Cailler-Kohler Chocolate Co., New York, and Wm. F. R. Murrie, Hershey Chocolate Co., Hershey, Pa., the explanation that the packers were customers and not competitors of cocoa manufacturers.

Members of the industry were termed to include any and all who manufacture for sale cocoa-bean products defined as "cocoa" and "chocolate" by the Federal Food and Drug Administration in Definitions and Standards of Food Products (S.R.A., F.D. No. 2 Revision 4; August, 1933) including solid chocolate products with added fruits and/or nuts.

Relative to an interpretation of the section providing for a normal maximum of 8 hours per day, 40 hours per week, Howard A. Jones, Rice Chocolate Co., Everett, Mass., and Wallace T. Jones, Rockwood & Co., Brooklyn, cited the possibility of a responsible, trained operator having to work over the 8-hour day maximum to prevent damage to plant equipment and/or loss of working time by a shift of less skilled employees. To cover such a situation an amendment was offered for inclusion in the section dealing with emergency maintenance and repair work which would include skilled employees engaged in continuous processes.

Provision for an 8-week peak period in either half of any calendar year and not to exceed a total of 14 weeks in any full calendar year occasioned the first opposition to the terms of the proposed code. During these periods the industry asked as a maximum a 9-hour day, 44-hour week at regular wage rate and an additional 4 hours per week at the rate of time and one-third. In support of this request the proponents of the code cited that during the years 1931, 1932 and 1933 the average production for the months of January, February and March was 39,000,000 lb.; for April, May, June and July, 32,000,000 lb.; and for August, September, October and November, 44,000,000 lb.

J. A. Bachman, Bachman Chocolate Manufacturing Co., Mt. Joy, Pa., and J. D. Warfield pointed out that these peak-period tolerances were of even greater importance to the small manufacturer who cannot finance storage, raw material, and manufacturing expense as well as can the large manufacturer.

Exception was taken to the wage differential of 40 cents per hour for men and 35 cents per hour for women except when doing substantially the same work and during the same hours that women are permitted by State labor laws to work. Both the administration and the labor union representatives were opposed to any differential based on sex.

J. M. Barbour, Klein Chocolate Co., Elizabethtown, Pa., asked for a wage differential based on population of the community in which the factory was situated. He based his request upon the difference in cost of living for the employees and the higher cost of doing business because of higher freight charges.

A significant recommendation by Legal Adviser Goldman was an amendment to the powers and duties of the Code Authority authorizing the appointment of a trade-practice committee to meet with trade-practice committees appointed under other codes of related industries for the formulating of fair trade practices governing relationships between the production and distribution employers under the codes.

Post-hearing conferences on the code indicate that the terms will not be substantially changed, except possibly the labor provisions.

Efforts are being made by the government to reduce the 40-hour week in the proposed code to 36 hours, with resulting pay increase. The move is being made in connection with the President's recent appeal to industry for further shortening of working hours and higher wages under the N.R.A.

Minimum Mark-ups Added To Grocery Codes

Minimum mark-ups of 2 and 6 per cent have been included in the approved codes of fair competition for the wholesale and retail grocery trades, respectively, effective March 31. Designed to bring stabilization to the trade, the mark-ups are to be based upon the invoice or replacement cost, whichever is lowest, after deduction of all legitimate trade discounts exclusive of cash discounts for prompt payment of any such product." These allowances have been sought by both the chain and independent dealers and they are expected to improve the morale of the trade and assist small concerns to remain in business.

Canners Misbehaving on Code, Food Administration Charges

A verbal spanking of the canning trades for their "misbehavior" in refusing to meet the demands of the Recovery Administration with relation to code provisions on hours and wages has been administered by Armin W. Riley, division administrator of the N.R.A. in charge of food industry pacts.

"The canners are not behaving," Mr. Riley stated. "They are trying to get a code, but they are far from being in accord with the feeling of the rest of industry." He explained that the principal objection of the industry is directed at the Recovery Administration's desire to place a limitation on the definition of perishable products.

The canning code permits the maximum hours to be exceeded in processing perishable commodities. The N.R.A. fears that provision will be applied to practically every product, and wants to limit it to commodities having a certain percentage of deterioration in anywhere from 24 to 72 hours. "Everything will deteriorate if you give it time," Mr. Riley, reasoned.

The problem is still being negotiated with the industry as is the question of wages. The canners want a wage minimum of 20 cents an hour in the South and 25 cents in the North. The division administrator disapproves, pointing out that the average wage in other codes has been around 40 cents. The canners, however, are not averse to a higher wage minimum in cities of over 350,000 population.

Code Authority Conference Brings the Unexpected

While the food industries directly were little affected by the NRA conference of code authorities, indirectly they may find great importance in the results achieved. Two important, little-expected results developed from what proved to be a real conference, not merely a love feast of administrative approval:

1. Clear recognition was at last accorded the construction and heavy industries, in which now is found at least 60 per cent of residual unemployment. Their welfare must be achieved before general good business can come. They are today lagging most in total payrolls. Food industries are deeply concerned because food prices vary almost proportionately with total factory payrolls, including these heavy industries.

2. The participation of employers in general planning was broadened beyond previous conception, most controversies heretofore being viewed as between capital and labor, with management largely disregarded. New participation of industrial executives actually within N.R.A. is expected. Management is still accepted as the spokesman of capital, probably with some, though not complete, justification.

A.A.A. Moves to Enforce Voluntary Agreement

A.A.A. is seeking to enforce the voluntary evaporated - milk - marketing agreement, in which no license has been in effect, by citing the United Milk Products Co., of Cleveland, for violation of the wholesale price schedule in selling to the Kroger Grocery & Baking Co., of Cincinnati. The company, according to the A.A.A., has stated in writing that it is not bound by the agreement which it signed. Under the Agricultural Adjustment Act the Secretary of Agriculture may report any violation of any agreement to the Attorney General for prosecution.

Possible N.R.A. Price Policy Outlined by Observer

An obstacle that has been blocking completion of some of the food codes may be removed if a price policy plan reported to be under consideration by N.R.A. becomes a reality. At least, code committees would know what to do about price provisions. The new plan, as outlined by an observer in Washington, provides for a permanent Price Policy Authority (P.P.A.) to deal with cost, price and sales trade-practice provisions. Appropriate open-price provisions, he thinks, will be continued, with or without a waiting period, according to the requirements of the particular industry, with certain qualifications.

These might be:

1. That price schedules be available simultaneously to all groups legitimately interested.

2. That the code authority file with P.P.A., once a month, charts of daily changes.

3. That all changes in prices be filed simultaneously with P.P.A.

4. That P.P.A. can temporarily stay or, in extreme cases, permanently revoke open price provisions in any code.

5. That code authorities shall set up machinery and take responsibility for control of open price provisions until abuse of this authority is proved against such code authorities.

6. That price provisions shall be literally interpreted.

Immediate approval of all open price provisions in codes, future provisions to be referred to P.P.A. before going into effect, also is forecast. Below cost provisions are expected to be retained until reviewed by P.P.A., as are resale price maintenance provisions.

Canners' Agreements Accepted; Action Taken on Others

Elimination of the provision for allocation of pack has removed the big obstacle to the canners' marketing agreements, and those for peas and corn have been tentatively approved. Opposition to the attempt to curb production threatened to block the corn and pea agreements and was finally abandoned by its sponsors when the A.A.A. held that available statistical information is not sufficient to assure equitable allocation this year. It also has been dropped from the agreement for tomatoes. To set up a plan of allocation in 1935, if it seems desirable, provision is made in the agreements for collection of accurate records on this year's pack.

Under the corn agreement minimum prices to growers will be figured by adding 40 per cent to the weighted average of last year's contract prices if under $7 a gross ton; 35 per cent if $7 or over, with a minimum increase of $2 a ton. On peas, the minimum contract prices must average at least $6.50 a ton more than last year. The minimum prices are protected by prohibiting the canner from increasing service charges over his 1933 contract basis unless the regional committee approves.

Flat Prices to Growers

Canners must settle with growers at a date no later than last year and in any event not later than Dec. 1 on peas, and Dec. 31 on corn. The corn and pea agreements cover a two-year period, subject to adjustment.

The tomato agreement, soon to be submitted to the industry for ratification, includes the same provision for regional committees and a national control committee that are incorporated in the corn and pea agreements. As submitted for hearing in Washington March 3, the tomato agreement would establish flat prices to growers in eighteen specified price districts, as follows (the prices quoted are in dollars per ton):

New York, 11.50; New Jersey, 13; Pennsylvania, 11.50; Ohio, 9.50; Indiana, 9.50; Illinois, 9.50; Iowa, 9.50; Missouri, 9.50; Delaware, 11.50; Maryland, 11.50; Virginia, 10.25; Kentucky, 9.50; Tennessee, 9.50; Colorado, 9; Utah, 9; California, 11.50; Michigan, 9; and Arkansas, 9.50. When tomatoes are bought on the basis of U. S. grades, the minimum prices proposed are as follows: For No. 1, 135 per cent and for No. 2, 75 per cent of the flat prices listed.

A.A.A. is now considering a proposed marketing agreement submitted by kraut packers covering minimum prices to growers. An agreement fixing minimum prices for the carry-over from the 1933 sour-cherry pack is in the hands of the industry for signatures. The canners are reported to be framing a marketing agreement for 1934, but A.A.A has not seen any material results to date. The license of the California asparagus-canning industry went into effect March 6.

Southern rice-crop control is sought in a new marketing agreement effective March 6. Growers who contract to restrict their acreage by 20 per cent and their marketings from the allotted acreage to the average of such acreage for the base period, 1929-33 inclusive, will receive in return benefit payments equal to 40 per cent of parity from a trust fund which the millers have agreed to establish. This benefit is in addition to the 60 per cent of the parity price which growers are to receive when they market their crop. Contracting millers will be licensed by Secretary Wallace. They agree not to sell in the domestic market for less than actual cost of the rough rice delivered at the mill, plus conversion cost, the cost of container and the marketing fund charge. Terms of sale and brokerage also are prescribed. The California rice agreement has been amended by increasing from 30 per cent to 40 per cent the proportion of the parity price paid into the trust fund.

Measures for protecting the peanut industry against low returns were under advisement late in March, the control board for the miller's marketing agree-

ment having requested the A.A.A. to adopt some program for control of production or marketing. A marketing agreement and license for fresh California asparagus was signed last month, and an agreement for Florida strawberry shippers was tentatively approved.

Believes Corn-Hog Program Will be Successful

Approximately 900,000 corn-hog contracts have been signed, and Secretary Wallace is confident that if the sign-up the country over is as thorough as in the corn belt itself, the objective of reducing hog production this year by eight to ten million head and corn acreage by twelve to fifteen million acres may be realized. The contract now being signed by farmers is for only one year. It calls for a reduction by individual signers of 25 per cent. in hog production and at least 20 per cent. in corn production.

Final tabulations show that processors paid $30,643,000 for the pigs and sows slaughtered in the emergency marketing program last autumn. Of the 6,410,800 head purchased, 1,083,700 were light hogs processed into meat; 222,100 were sows processed into dry salt meat; and 5,104,900 were pigs under 80 lb. converted into grease and fertilizer tankage.

In the program to reduce wheat acreage 15 per cent, Uncle Sam had paid out $62,000,000 to 746,475 farmers in 37 States up to March 15.

Private Refrigerator Cars May Be Restricted

Use of private refrigerator cars will be greatly restricted if the Interstate Commerce Commission approves findings of its bureau of service. A report by the bureau approves the railroads' proposal that they furnish exclusively all brine tank refrigerator cars required by shippers other than the big meat packers. The railroads' other rules discouraging use of private cars were rejected, but only that the railroads may be prevailed upon to make them more drastic.

The railroads' effort to tighten their rules was aimed principally at the practice by private car lines of leasing refrigerator cars to shippers, but the service bureau's report urges the Commission to find uneconomical the use of private refrigerator cars in general, except in the case of packers able to take care of their own needs entirely.

Payment of mileage allowances by the railroads in excess of rental paid by shippers to private car lines is declared to look suspiciously like violation of the Elkins Act prohibiting rebating and discrimination between shippers. Allowances paid by the railroads as mileage earnings in excess of the cost of the cars to shippers, including meat packers, also are condemned as unreasonable, discriminatory and unlawful rebates and concessions.

Shippers of candy, canned goods and dairy products, together with small meat packers, objected to the railroads' furnishing all refrigerator cars ordered by shippers.

A hearing on the Commission's report has been scheduled for May 1.

Grass to Replace Crops; Will Cut Meat Supply

Using as its slogan "back to grass and forage," the Department of Agriculture has launched a pretentious, long-time program intended to transform 50,000,000 cultivated acres into pasture. This resort to extensive farming in contrast with the past trend to intensive methods, strange as it may seem at first blush, has the support of livestock and dairy interests. The average acre devoted to cultivated crops produces twice as much animal feed as does the acre of pasture. If pasture is increased at the expense of cultivated crops, livestock feed is reduced, which in turn influences the total production of livestock. Seventy per cent of the output of the present cultivated acreage is consumed by livestock.

Politics Against Tax on Oils; Margarine Men Want It

Secretary of War Dern, supposedly acting upon instructions from President Roosevelt, gave the proposed tax on coconut and sesame oils a severe and perhaps fatal setback on March 16. Appearing before the Senate Finance Committee, he strongly opposed the proposed 5-cent excise tax on the ground that its adoption might upset pending negotiations for release of the Philippine Islands from U. S. sovereignty.

Meanwhile, the Institute of Margarine Manufacturers submitted to the Senate Finance Committee a brief favoring the tax. The margarine manufacturers contend that a product of just as fine quality and high food value can be made from cottonseed oil as can be produced from coconut oil and other domestic fats. In giving this statistical picture, the brief pointed out that the quantity of cottonsed oil used in margarine dropped from about 60,000,000 lb. in 1915 to 16,000,000 in 1933. In the same period, the quantity of beef fat used declined from 100,000,000 lb. to 16,000,000; neutral lard, from 40,000,000 to 9,000 000.

HORS D'OEUVRES

WILL WONDERS never cease? The meat packers at last have done something that pleases the Administration. General Johnson recently congratulated the industry for its fine labor showing under the New Deal.

•

FROM ENGLAND comes a miniature homogenizer which makes cream from butter and milk at a cost much less than the retail price. Could it be that the price of cream is too high?

•

FOR DREAMLESS SLUMBER a snack of good old-fashioned corn flakes and milk before retiring is quite effective. So conclude psychological experts at Colgate after scientific tests. Will someone page Sanka, Ovaltine, et cetera?

•

HEAVY ORDERS for canned horse for the French market are being booked by packers at Butte. Wonder if this is what they have reference to when they say the French menu is being Americanized?

•

CHASE & SANBORN taught consumers to prefer fresh coffee. And now the grocers are giving it to them. But the grocer's fresh coffee is that ground while you wait and not that packed in dated cans. Just another business boomerang.

•

TEXAS CONSUMED only one carload of cherries in 1930, but last year Michigan Cherry Growers, Inc., sold 40 carloads there. Advertising copy still influences the appetite, it seems.

•

REGARDLESS of the hour that the sardine boats arrive with the catch in the harbor at San Francisco, the cannery employees turn out at the toot of the whistle. Looks as if the sardine makes a sucker out of someone.

•

BEER is going high-hat. It has gotten into recipes for such delicacies as tomato-beer cocktail, beer jelly, beer cabbage salad and Danish beer soup. Even meats are being boiled in it.

•

PUBLIC HEALTH OFFICIALS are worried over the proposed tax on coconut oil. Not that it will boost the cost of basic foods, but because it will make soap expensive.

600 Bakery Engineers Attend Trade Convention in Chicago

More than 600 members of the baking industry convened at Chicago March 15 for the annual meeting of American Society of Bakery Engineers. This set an all-time high for attendance.

The program got off to a flying start with an inspirational address, "Making a Winner," by the dynamic University of Illinois football coach, Robert C. Zuppke. Then followed an accounting of the association's activities in the past year by President Carlos S. Pickering, who reported that about 850 now have membership in the organization. Henry Stude, chairman of the National Baking Council, discussed the labor, sale-returns and other provisions of the proposed code, emphatically pointing out that there will be no price-fixing.

The practical part of the program began with a debate on "Resolved that low-protein flour makes better pan bread than high-protein flour." Scoring in favor of the high-protein flour were arguments that its use would increase consumption of bakery products, reduce fermentation loss, give greater gas retention, allow larger tolerances in fermentation and mixing, give greater absorption and require leaner formulas and less supervision. As to the cost of high-protein flour, it was held to be no greater than that of low-protein product.

But the debaters supporting the low-protein flour argued that it effected a sizable saving in cost. Furthermore, they held it gives a loaf with good keeping quality, texture, volume and flavor. To do this, the protein must be of high quality, which is the important factor.

Should Burn Out Pans

Talking on the handling of pans, Dr. E. B. Hutchins stressed the point that the expense and trouble involved in properly cleaning pans results in a saving in the long run. Bakers should burn out their pans, he said. Robert L. Gerdes, in a comprehensive paper on soybeans and their processing, predicted a future for soybean flour, stating that the legume contains more than twice as much protein as beefsteak, or 35 per cent. Cases were cited where 30 and 35 per cent of this flour had been successfully used.

A wide variety of special brands stimulates business without injuring sales of regular brands, C. A. McDuffee told the bakers. And M. L. Langford said that sales are increased by wrapping the loaf in transparent cellulose, instead of wax paper. In the session on cakes, it was suggested that no cake be more than 48 hours old when sold to the consumer, thus avoiding many complaints.

EDWARD M. JOY
Elected President of Bakery Engineers

"It is a fallacy to think that rich bread cannot be made on the brake; it can be," Lon Eveleth stated in an address on dough-brake breads. "The advantages of the brake are that it saves investment in more expensive machinery, produces bread with a more even grain, helps to eliminate holes and adds to the keeping quality," he continued.

Many other problems of the bakery were discussed at the convention, the interest of the group being held until late in the evening the closing day.

The bakery engineers chose as their new president Edward M. Joy, Purity Bakery, Providence, R. I. He succeeds Carlos S. Pickering. The other officers are: F. B. Evers, Nashville, and M. A. Gray, Minneapolis, vice-presidents, and Victor E. Marx, Chicago, secretary-treasurer (reelected).

CONVENTIONS

APRIL

9-10—Bakery Sales Association, annual, Cleveland, Ohio. Frank Nemetz, 1135 Fullerton Ave., Chicago, secretary.

21—Association of Operative Millers, quarterly, Kansas State College, Manhattan, Kan. C. W. Partridge, 516 Board of Trade Bldg., Kansas City, Mo., secretary.

29-May 3—Associated Bakers of America, Brown Hotel, Louisville, Ky. John M. Hartley, secretary, 360 North Michigan Ave., Chicago, Ill.

30-May 6—International Dairy Congress, Rome and Milan, Italy. O. E. Reed, chief of the Bureau of Dairy Industry, Department of Agriculture, official American correspondent.

MAY

4-5—American Institute of Refrigeration, annual, Washington, D. C. J. F. Nickerson, 433 North Waller Ave., Chicago, secretary.

Second Week—National Malt Products Manufacturers' Association, quarterly. S. L. Goldman, 160 North LaSalle St., Chicago, Ill.

7-11—National Premium Exposition and Convention, Palmer House, Chicago, Ill.

14-16—American Institute of Chemical Engineers, semi-annual, Waldorf-Astoria, New York, N. Y. Frederic J. LeMaistre, secretary.

19—American Institute of Chemists, Atlantic City, N. J. Howard S. Neiman, 233 Broadway, New York, secretary.

24-25—American Management Association, New York, N. Y. (Also Chicago, Boston and Pittsburgh.)

31—Rice Millers' Association, annual, F. W. Ferrer, 1102 Queen and Crescent Bldg., New Orleans, secretary.

Labor Board Asks Bakery To Deal With Union

The right of a labor union to bargain for employees was again upheld in the National Labor Board's decision in the case of the Hall Baking Co., Buffalo, N. Y. The company had refused to make any agreement with the Bakery Drivers' Union as a union, but expressed willingness to bargain with its employees or their individual representatives. The National Board recommended the making of a collective agreement with the union. This decision is based on Sec. 7 (a) of the Recovery Act, which states that there is no limitation upon the choice of employee representative. This section neither forbids nor requires the making of contracts naming a union or union officials as parties to the agreement.

The National Labor Board also successfully arbitrated labor disputes at the Columbus (Ohio) Packing plant.

Bread Scored at Meeting Of Cereal Chemists

Judging bread on the basis of taste and odor constituted the program of the March 6 meeting of the New York Section of the American Association of Cereal Chemists under the chairmanship of C. N. Frey, director, Fleischmann Research Laboratories.

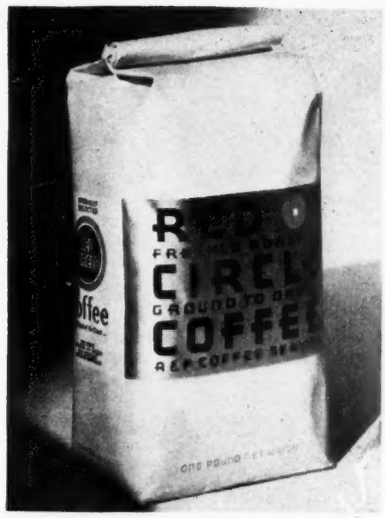
The 140 samples of 7 fresh white breads were so prepared by Bert D. Ingels, Wallace & Tiernan Co., as to maintain their characteristic qualities until judged and were apportioned to the 35 judges in a manner to assure that each bread was passed on by 20 different judges.

As each of the judges was instructed to score the four samples in the order of 1, 2, 3, and 4 for taste and for smell, the sample receiving the lowest total score would rate the highest. It is interesting that the two freshest breads received the highest ratings in both odor and flavor. The total score of each sample was as given below. Number inside parentheses denotes order of choice by judges.

	Odor	Taste
Sample A	40.5 (2)	40.5 (1)
Sample B	51.0 (4)	61.5 (7)
Sample C	53.0 (5)	52.5 (5)
Sample D	49.5 (3)	49.5 (4)
Sample E	56.0 (6)	48.0 (3)
Sample F	37.5 (1)	42.0 (2)
Sample G	62.5 (7)	56.0 (6)

Year's Best Packages

The Third Irwin D. Wolf Award, given for the commercial package judged best from both the artistic and utilitarian points of view, went to the Red Circle coffee bag used by Great Atlantic & Pacific Tea Co. and designed by Egmont Arens. The A. & P. Bokar coffee can won the honorary award for the tin-container group. The companion to these two containers is shown beside the can. These packages all have a gold label panel and black lettering, and the can has a gold top. The Red Circle bag is yellow, the can is black and the Eight O'Clock bag is red. The can has an easy-opening top, while the bag tops are rolled and held closed by bending a tin insert over the edges. All may be opened and reclosed easily.



Pointers on Packaging Presented At Fourth Annual Exposition

Everything about the merchandising aspects of a package from design to shipping came up for consideration at the Fourth Packaging and Shipping Exposition, held in New York, March 13-16, under the auspices of American Management Association.

Talking on the part played by a new bottle in promoting sparkling water, W. S. Brown, Jr., Canada Dry Ginger Ale, Inc., effectively demonstrated the value of eye-appeal and "atmosphere" in a container. He told how his company had created a good demand for its product in a highly competitive market by coordinating good package design with intelligent advertisng. The highly successful bottle for the sparkling water was designed to produce an iridescent rainbow effect and create a cool "atmosphere." The artist dressed the bottle in a shiny silver-foil body label featuring a sparkling diamond. This container makes an excellent display, looks cool and is attractive. It has been 20 months since Canada Dry introduced its sparkling water, and it is selling an ever-increasing volume in 48 States.

Problems encountered in family packaging were discussed by C. R. Miller, Eli Lilly & Co. With numerous products on the market, his company decided that a common package design would be an asset. With this in effect it became apparent that similar products in packages of the same size were confusing to the consumers. To overcome this difficulty, the designer resorted to a difference in background color in family packaging. Mr. Miller pointed out that the preparation of adequate printing plates, the selection of inks that can be repeated without variation and careful inspection of the materials at the start of a run were of vital importance.

Edward Dahill, American Railway Association, and C. M. Bonnell, Jr., Bonnell Publications, discussed packing and shipping and cited instances where manufacturers had reduced shipping costs and damages in transit, and even increased their distribution, through intelligent redesign of shipping containers.

Discussing the legal aspects of the proposed food and drug legislation, Dr. Laurence V. Burton, FOOD INDUSTRIES, gave the history of proposed measures and described the problems which they would introduce in packaging specific commodities.

By no means the least important part of the packaging conference were the packages entered in competition for the Irwin D. Wolf award. The Red Circle coffee bag used by the Great Atlantic & Pacific Tea Co. and designed by Egmont Arens, of Calkins & Holden, won the high honors. Commenting on the selection, C. A. Larabee, managing editor of *Printers Ink*, observed that the chain store is now doing the most in package design. Seven out of the fifteen honorary awards for the different classes of containers went to chain-store organizations, not to mention the winner of the grand prize.

Excluding families of packages, 312 containers were entered in the Wolf contest. Of these, 116, or 37 per cent, were food packages or carriers. And 26 per cent of the total number of honorary awards were for food packages. Among the containers receiving awards were the Bokar coffee can used by Great Atlantic & Pacific Tea Co., the Kingan "Reliable" line of packages (these were described and illustrated in color in the March issue of FOOD INDUSTRIES) and the cast aluminum beer barrel used by Standard Brewing Co.

Importers Take Advantage Of Higher Prices Here

Enterprising importers are showing quite a bit of interest in the possibility of bringing into this country agricultural commodities and manufactured articles the prices of which have been increased under the recovery programs, according to information reaching official circles at Washington. While government officials shy from giving information concerning the specific commodities and articles that are being worked on, rice is one of them. Rice prices in this country have been increased substantially under the A.A.A. marketing program for that commodity.

Imports so far are in the experimental stage and are centering upon rice from the Philippines, normally an importer of the commodity. Shipments into the country consist almost entirely of a very low grade of the product usually used in canned-soup manufacturing.

Heyman Decision Upheld

Litigation begun April 3, 1931, in the case of Krem-Ko Co. v. Heyman Process Corp. was terminated March 19, when the U. S. Court of Appeals, second division, decided for the defendant. The case was appealed after a like decision Feb. 6, 1933, in the U. S. District Court for the Southern District of New York.

The action of the plaintiff was based on the assumption that the North patents were valid and, therefore, that sole right to manufacture non-settling chocolate milk beverages was vested in Krem-Ko Co.

Six-Hour Day Cuts Costs At Kellogg Plant

Not only does the short working day please employees and the N.R.A. but it benefits the manufacturer as well. At least it worked out that way at the Battle Creek plant of the Kellogg Co. After operating 2½ years under the six-hour day, four-shift labor plan, the Kellogg Co. has issued a report of the effect of this system.

In cost, efficiency and smoothness of

(Turn to page 194)

MEN . . . JOBS . . . AND COMPANIES

Industry

ARBUCKLE BROS., New York, has contracted to buy the sugar tablet- and cube-making equipment of Spreckels Sugar Corp., Yonkers, N. Y. The machinery was put up for sale on petition of Spreckels receivers.

BASIC INDUSTRIES, INC., Chicago, has been organized by R. M. Preston and L. O. Stokes, former president and vice-president, respectively, White-Stokes Co. The new firm will supply basic egg, milk, sugar and soda-fountain products.

BENICIA BREWING CO., San Francisco, is planning erection of a plant to cost $1,000,000.

CHRISTOPHER CANDY CO., Los Angeles, was damaged by fire March 3, to the extent of $50,000 to buildings and $25,000 to equipment and contents.

DAIRYMEN'S LEAGUE COOPERATIVE ASSOCIATION, INC., announced plans last month to close 20 receiving plants in the New York milkshed April 1.

DETROIT PACKING CO., operated in receivership for the past year, has been taken over by a Michigan cooperative composed of 2,000 livestock producers.

FARMERS' NATIONAL GRAIN CORP., Chicago, began construction in March of the first unit of a wheat elevator at Amarillo, Tex., to have a capacity of 2,000,000 bu. and to cost $500,000.

M. K. GOETZ BREWING CO., St. Joseph, Mo., has completed plans for a new brewery in Kansas City to cost $500,000, with a capacity of 100,000 bbl. annually.

H. J. HEINZ & Co. Princeton (Ind.) plant will reopen this year after two years' idleness. F. F. Felts is manager.

LIBBY, MCNEILL & LIBBY canning plant, Brazil, Ind., was damaged to the extent of $10,000 when fire destroyed storage sheds March 16.

MORGAN PACKING CO., Austin, Ind., has bought the plant of the Franklin (Ind.) Food Products Co. from the Estate of E. Pritchard, New York, to pack catsup and tomato juice.

PERRY (IOWA) CANNING CO., large sweet corn packer, will operate during the coming season after two years' idleness.

PETER PAUL, INC., Naugatuck, Conn., will build a new plant incorporating latest improvements in straight-line production and doubling plant capacity. The Philadelphia plant of J. N. Collins Co., an affiliate, will be discontinued; its operations will be housed in the new factory.

SHARPLESS-HENDLER ICE CREAM CO., Wilmington, is making alterations and additions to plant and equipment, costing $45,000.

ST. LOUIS BREWING ASSOCIATION has sold its Klaussmann Brewery property to a syndicate headed by Lynn Barnes, Tulsa, Okla. The group is planning to repair, remodel and modernize the plant at a cost of $1,500,000.

SUN-MAID RAISIN GROWERS' ASSOCIATION'S right to sell goods other than raisins under the "Sun-Maid" name was recently upheld by federal court decision in the suit brought by California Packing Corp., to prevent the use of the "Sun-Maid" name because of its similarity to the "Sun-Kist" trade-mark.

SWIFT & Co., Chicago, purchased last month the packing plant and other property of Union Meat Co., San Antonio, used last year for A.A.A. hog slaughter to supply state relief requirements of pork.

WICHITA FALLS (TEX.) MILL & ELEVATOR Co. will rebuild its grain elevator wrecked by spontaneous combustion March 13 at a loss of about $500,000.

GEORGE ZIEGLER CO., Milwaukee, has consolidated with Twink Products Corp., Milwaukee, manufacturer of confectionery icings and frostings. Products in addition to those already made by the two firms will be manufactured.

PERSONNEL

ROSS E. ANDERSON, formerly general production manager, Western Bakeries, Inc., of California, and past president, American Society of Bakery Engineers, has been appointed manager, bakers' sales service department, General Mills, Inc., Minneapolis.

LEON L. BENHAM, former general manager, Lyons-Magnus, Inc., San Francisco, has been elected president to succeed D. E. KOSHLAND, now vice-president.

N. E. BERRY, formerly chief chemist, Calumet Chemical Co., is now research chemical engineer, Diamond Crystal Salt Co., St. Claire, Mich.

JAY BURNS, vice-president, National Bakers' Association, has been elected president and manager, Midland Bakeries Corp., Terre Haute, Ind.

ELMER E. CHASE, Richmond-Chase Co., and PRESTON MCKINNEY were elected president and secretary, respectively, Canners' League of California, March 6.

S. A. CLARKE, president and general manager, Cereal Products Refining Corp., San Francisco, resigned, has been succeeded by KARL F. SCHUSTER, former vice-president.

T. J. DEE has been appointed general manager, Chicago plant, Armour & Co., succeeding WARREN SAPP, now vice-president, executive staff. C. L. ASHLEY, former superintendent, West Fargo (N. D.) plant, is assistant Chicago plant manager.

WIRT FARLEY, formerly vice-president and partner, Farley Candy Co., Chicago, is executive secretary, Specialty Confectioners Association, with temporary headquarters at 33 E. Ohio St., Chicago.

CHARLES W. TAUSSIG
Submits Virgin Islands Rum Report

RICHARD HELLMANN, head of Richard Hellmann, Inc., until its incorporation in Best Foods, Inc., now operates V. V. Nut Kitchen, Inc., of Delaware, Long Island City, N. Y. Among his firm's 50 or 60 food products on the market are condiments, prepared nuts and table delicacies. A fleet of trucks handles distribution through a wide Atlantic seaboard area.

JULIAN M. LIVINGSTON, former vice-president and general manager, Ward Baking Co., New York, has been elected president to succeed F. K. MORROW, who resigned last year.

FRANK C. LOWRY, former president, National Biscuit Co., and head of Lowry & Co., New York sugar brokers, has been appointed co-receiver for

Syrup Products Co., Inc., Yonkers, subsidiary of Spreckels Sugar Corp.

A. D. LYNCH, secretary-manager, Sanitary Milk Producers, Inc., St. Louis, has begun his duties with the advisory board, A. A. A. dairy division.

GEORGE B. MORRILL, president, Burnham & Morrill Co., has purchased for a private undertaking the Belfast plant and equipment of Saco Valley Canning Co.

SAMUEL OPLER, sales head of the packing division, Rockwood & Co., Brooklyn, has been made a vice-president, and H. R. BURBANK, vice-president, a director.

R. C. PEACOCK, former superintendent, Medina (N. Y.) plant, Snider Packing Co., is vice-president and general manager, Barker Canning Co., which will operate Somerset Packing Co. plant, Barker, N. Y., this season.

R. B. POTTS, chief chemist, Wichita Flour Mills Co., presided at a joint meeting of the Pioneer, Nebraska and Kansas City sections, American Association of Cereal Chemists, March 31. R. K. DURHAM, chief chemist, Rodney Milling Co., Kansas City; C. F. DAVIS, chief chemist, Western Flour Mill Co., Salina; and W. R. GREEN, Bakeries Service Corp., Kansas City, addressed the gathering.

J. C. SCHMIDT, former city sales manager, George Ziegler Co., Milwaukee, has been appointed general sales manager. He entered the firm in 1905.

DR. H. C. SHERMAN, Mitchill professor of chemistry, Columbia University, was awarded the William H. Nichols Medal before a joint meeting, American Chemical Society in charge, New York Chemists Club March 9. "The Chemistry of Vitamins—Quantitative Aspects" was the subject of Dr. Sherman's acceptance speech.

JESS B. SMITH, Salina, Kan., was elected president, Millers' National Federation, at Chicago March 1.

JOSEPH STOKLAS, with Larabee Flour Mills Co. since 1925, is now chief chemist, Omaha Flour Mills Co., succeeding W. L. HEALD.

HENRY STUDE, president, American Bakers' Association, last month was appointed a member of the Consumers Goods Committee, set up by Administrator Johnson.

CHARLES W. TAUSSIG, president, American Molasses Co. and Nulomoline Co., New York, and special adviser to the government of the Virgin Islands, last month reported to President Roosevelt a plan to make the rum industry in the Islands a public monopoly, with profits to go to welfare work there.

CORWIN WICKERSHAM, for the past four years president, Standard Brands, Ltd., Montreal, is now vice-president,

CORWIN WICKERSHAM
Heads Standard Brands' Widlar Co.

Standard Brands, Inc., with executive direction of the foreign department and of Widlar Co., Cleveland. His affiliation with subsidiary Fleischmann Co. began in 1916.

W. N. WILDS, former vice-president and secretary, American Beet Sugar Co., Denver, has been elected president.

EDWARD F. WILSON has been elected president, Wilson & Co., Chicago, succeeding his father, THOMAS E. WILSON, now chairman of the board of directors. The latter had been president of the company since 1916.

W. G. WORMLEY, former general plant manager, Widlar Division, Standard Brands, Inc., Cleveland, plans a six- to twelve-month rest, now resides at Salinas, Calif.

DEATHS

THOMAS B. ANDREWS, 65, president, Davis & Andrews Co., Memphis, March 15. He was co-founder of the milling firm in 1900. He was past director, American Federation of Corn Millers.

STEPHEN T. BRITTEN, 74, vice-president, American Chicle Co., Long Island City, N. Y., Feb. 27. He founded Canadian Chicle Co., later amalgamated with American Chicle Co.

H. J. JARVIS, 60, superintendent, Philadelphia factory, National Licorice Co., at Philadelphia Feb. 24. He had been in the candy business for 35 years.

E. M. JOHNSON, 81, president, Mead Johnson & Co., Evansville (Ind.) manufacturer of baby foods and medical supplies, at Miami Beach March 20. With his brother, the late James W., he founded Johnson & Johnson Co., makers of surgical supplies, in 1886 at New Brunswick, N. J. Withdrawing from that firm in 1897, he organized Caroid Co., Jersey City, and later the Indiana company.

JOHN H. MOORE, 58, president, Wichita Flour Mills Co., at Kansas City March 13. He was also president: Moore-Lowry Flour Mills Co., Kansas City; Willis Norton Co., Wichita; Acme Flour Mills Co., Oklahoma City; and vice-president, Security Flour Mills Co., Abilene, Kan.

JACOB PANCERO, 76, president, Jacob Pancero Packing Co., Cincinnati, March 1. He had been identified with the industry in Cincinnati for 50 years.

GEORGE N. HOFFMAN, 69, production manager, General Baking Co., St. Louis, March 9. He had held his position for 31 years.

A. E. ROWSE, 72, president, New England Vinegar Works, Somerville, Mass., Feb. 25. After acting as manager since 1891, he bought Standard Vinegar Co. in 1900, changing the firm name to the above.

Associated Industries

CHERRY-BURRELL CORP., Chicago, has announced the removal of its New York offices from 31 Union Square to the McGraw-Hill Building, and the removal of its Brockville, Canada, office to 689 West King St., Toronto.

CREAMERY PACKAGE MANUFACTURING CO., Chicago, has announced the opening of a sales office and warehouse in Salt Lake City. C. D. Paris, manager, Denver branch, will supervise the new establishment.

FILTROL CO. of California, manufacturer of "Filtrol" and "Neutrol," used in refining and bleaching animal, vegetable and mineral oils, plans to build a Middle-Western plant to supply mid-continent and Atlantic coast demands.

WILBUR G. HUTCHINS, former vice-president and chief engineer, Curtiss-Wright Airport Corp., has been appointed chief engineer, Link-Belt plant, Chicago.

PACKAGING MACHINERY INDUSTRY, through its code authority, has announced its intention to adopt a 30-hr. week for common labor at increased wages. Some of the members of the Canning and Packing Machinery Industry have expressed their desire to follow the same policy.

EMIL RAUE, 50, president, J. M. Lehmann Co., New York, died March 19. For two years head of his firm, he was considered an expert on chocolate machinery.

RIEGEL PAPER CORP., New York, is offering glassine in any color desired, in lots as small as 500 lb.

FREDERICK E. WATERMEYER, 62, president, Fritzsche Bros., New York, died March 19. With the firm since 1900, he had headed it since 1913. Identified with several trade associations, he was chairman, essential oil committee, drug, chemical and allied trades section, New York Board of Trade.

BUSINESS TRENDS

Packing Plant Employment Rises 24 Per Cent in 1933

More men were working in meat-packing plants during January, this year, than during any other month since January, 1929. Payrolls were larger than in any month since February, 1931. During the 52 weeks preceding Jan. 31, this year, the number of workers increased 24 per cent, and during the same period payrolls rose 36.5 per cent. Figures were reported to Administrator Johnson by the labor committee, Institute of American Meat Packers.

Employees in meat-packing plants in December, 1933, worked from 40.1 to 45 hours per week, longer than any other group in the 25 industries surveyed by the National Industrial Conference Board.

Figures on farm income indicate that: While during the 52 weeks from Feb. 24, 1933, to Feb. 24, 1934, the farmers' income from crops rose 24 per cent, their return from livestock sales was only 2.0 per cent larger. Some of the significance of the figures, however, is mitigated by the unprecedented volume of livestock which moved to market during the period.

BASIS FOR THE CURVES

Retail food prices, factory employment, factory payrolls and wholesale prices are based on indexes of the Department of Labor. Cost-of-living index is that of the National Industrial Conference Board. Electrical-power-consumption figures are furnished by *Electrical World*.

Prices Stabilize

Commodity prices during the first half of March tended toward general stabilization, though individual quotations showed marked deviations from the broad movements. Food prices were mixed: meats, eggs and fresh foods were up; butter, sugar and cocoa declined slightly.

Business activity during the first two weeks of March continued its upward trend, led by the automotive and steel industries, almost to last year's July peak. However, it was observed that the rate of increase in activity slowed somewhat, particularly around the middle of February and the middle of March.

The Business Week Index of business activity stood at 64.4 per cent of normal for the week ending March 17—2.0 per cent lower than on Feb. 17 and 0.2 per cent lower than on Jan. 16.

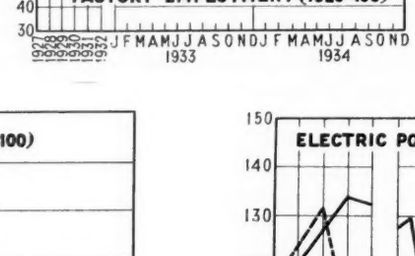
Wholesale prices reported by U. S. Department of Labor for the month ending March 17 remained unchanged from the figure of Feb. 17, 73.7—13.4 per cent above the figure of March 18, 1933. Farm products were off 0.1, but manufactured foods were up 0.3 per cent in the four-week period.

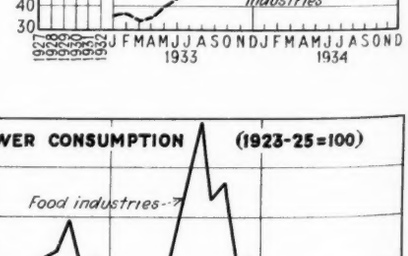
All commodities during the five weeks ending March 24 sagged 1.1 per cent in the New York *Journal of Commerce* weighted price index; grain was off 1.0 and food 4.2 per cent.

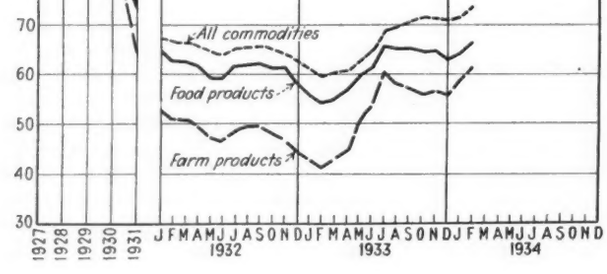
Major Industries in 1933 Boast Black Balances

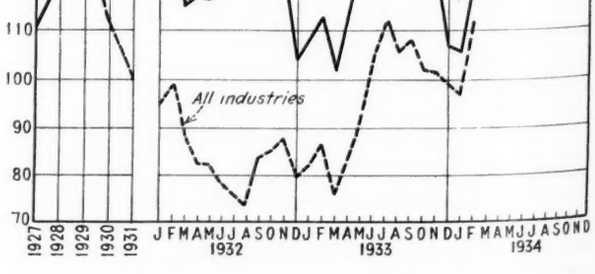
Total net profits in 37 major industrial groups during 1933 are reported to have been $440,000,000, rather a surprising "black" figure after the "red" one during 1932, estimated at about $46,000,000. Figures were compiled and published from corporation reports by the National City Bank of New York. They are considered in some quarters sufficient rebuttal to the charge that New Deal benefits are being taken out of the pockets of industrialists.

Among the food groups, the baking industry proved to be the only one of the five groups included which showed smaller total net profits for 1933 than for 1932—in fact, 12.5 per cent smaller. Net profits dropped from $27,000,000 in 1932 to $23,600,000 in 1933. However, miscellaneous food products showed net profits 19.7 per cent greater, sugar 99.6 per cent greater, and confectionery and beverages 252.3 per cent greater, during 1933 than during 1932. Eighteen meat packers, who lost more than $2,000,000 in 1932, made $22,347,000 in 1933. Sixteen confectionery and beverage firms showed the largest return on net worth —12.6 per cent. Twelve sugar firms showed the smallest return on net worth, 2.8 per cent. The return of each of the five food groups, except baking, was larger last year than in 1932.









Uses Huge Food Poundage

Emergency relief consignments of food handled by State administrations throughout the country from November to March 15, inclusive, amounted to approximately 400,000,000 lb. Besides this munificent gift, Federal Emergency Relief Corp. beneficences included 1,032,304 blankets, 1,100,595 tons of coal and 9,620,923 bu. of feed grain. Shipments were equivalent to 40,824 carloads.

Relief food distributed included:

	Thousands
Oranges (bags)	525
Syrup (gallons)	226
Pork (pounds)	210,164
Flour (pounds)	89,370
Butter (pounds)	47,755
Lard (pounds)	10,593
Canned beef (pounds)	18,054
Cereals (pounds)	13,127
Cheese (pounds)	3,602
Beans (pounds)	4,998
Dried apples (pounds)	885

Butter Stocks Again Reduced

Storage stocks of butter on March 1 were 36,842,000 lb., compared with 75,995,000 lb. on Feb. 1. These figures, reported by the Department of Agriculture, show a reduction of stocks totaling 39,153,000 lb., slightly more than in January. Government agencies removed 22,002,545 lb. for relief purposes; commercial agencies, 17,150,455 lb.

U. S. Sugar Production Up

Beet-sugar consumption during the first two months of this year, based on distribution figures, totaled 261,105 long tons, raw value; 68,599 tons, or 35.6 per cent more than during the same period last year. Cane-sugar distribution for the two months was 587,876 tons, an increase of 25,144 tons, or 4.5 per cent, over the 1932 figure. In this connection, it is notable that domestic production in the 1932-33 crop year was 6.19 per cent of the world production figure, 1.4 per cent greater than for the 1931-32 crop year. This increase was the only substantial one during the past five crop years, though the trend of domestic production has been steadily upward. Cuba's share of world production has been steadily downward, having fallen from 18.38 to 8.08 per cent in the 1928-1933 crop years.

Total Shrimp Pack Mounts

Shrimp packs in four regions from Aug. 1, 1933, to Feb. 28, 1934, totaled 681,267 cases, according to figures of the shrimp section, National Canners' Association. The total United States pack exceeded that of 1932-33 by 155,833 cases and that of 1931-32 by 23,356 cases. The smaller totals of the preceding two seasons resulted in part from labor troubles in Mississippi coast plants, a factor of much lesser consequence during the past season.

Foreign Exports Reported

Argentinian casein exports during 1933 reached an all-time peak, 23,038 metric tons. Shipments to the United States during the period were 3,210 tons, nearly 3,000 more than in 1932, but 3,600 less than the twelve-year average. Germany and England received the largest and second largest shipments, respectively. Until 1931 the United States was the largest user of the Argentinian product.

Norwegian cod-liver oil production during 1933 dropped nearly 500,000 gal. from the 2,501,267-gal. figure for 1932. Exports of steamed medicinal cod-liver oil to the United States amounted to 2,153,652 gal. in 1933, 307,378 gal. more than in 1932.

INDICATORS

NUMBERS of cows and heifers kept on farms for milk increased nearly 4.0 per cent during 1933, and reached an all-time record the first of this year, 26,062,000, according to figures of the department of agricultural economics, Cornell University. The cow cycle is expected to reach a peak this year.

BEET PACKS in the United States in 1933, expressed in actual cases, totaled 1,005,773 cases, 122,823 more than during 1932, but less than during any other year of the last seven.

COLD STORAGE HOLDINGS of fishery products on Feb. 15 were 32,612,424 lb., nearly 3,000,000 lb. less than on the same date last year and about 15,000,000 less than the five-year average.

TEN PER CENT greater acreage is expected to be planted this year than last by 136 pea canners who contracted half the total acreage last year. The largest total since 1930, 246,000 acres, is covered at present by contracts.

DOLLAR VOLUME of grocery and combination store sales, including chains and independents, was 4.0 per cent less in 1933 than in 1932. Dollar volume of independent grocery and combination stores during the same period declined 3.0 per cent, while chain-store dollar volume dropped 6.0 per cent. A. & P. dollar volume during the fiscal year ending Feb. 24 was 5.5 per cent lower than in the preceding year. Tonnage sales were 6.0 per cent lower.

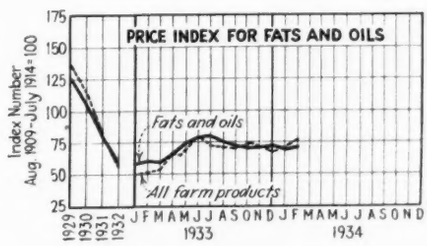
RELIEF PORK during the two-week period ending March 3 moved out of storage to the tune of 1,000,000 lb. per day, decreasing the total stored under government ownership by 21.4 per cent and leaving 51,921,000 lb., representing 325,000 hogs bought by the Federal Surplus Relief Corp. and slaughtered by Chicago packers.

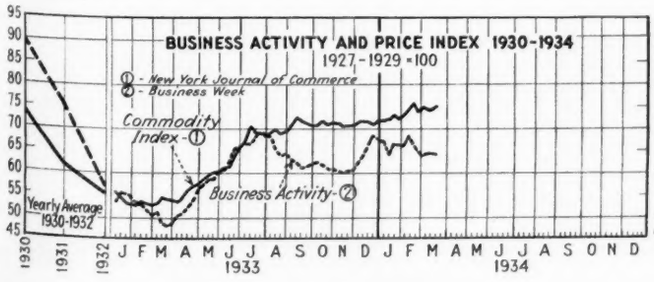
NEW OR REDESIGNED PACKAGES marketed last year totaled between 2,000 and 2,500, it has been estimated. About 100 billion units were manufactured with an investment of $640,000,000.

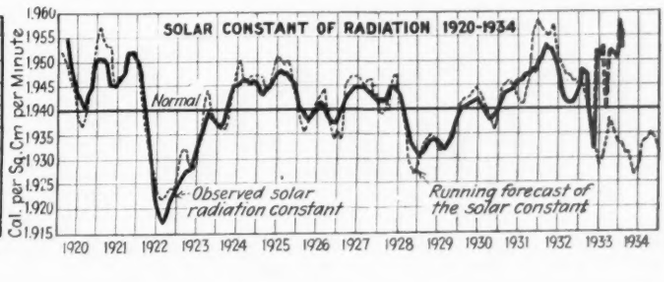
GERMAN 1934 LARD IMPORT QUOTAS have been set at 40 per cent of average imports in the base months of the years 1931 to 1933. The entire United States quota for this year is 56,534,000 lb.

CONSTRUCTION NEWS

	Pending (thousands)	Awarded March (thousands)	Total Awarded 1934 (thousands)
Bakery Products	$28	$89	$193
Beverages	4,201	1,563	3,506
Canning and Preserving	320	149	248
Confectionery	28	115	115
Grain Mill Products	842	2,554	2,754
Ice, Manufactured	54	....	30
Meats and Meat Products	1,709	110	206
Milk Products	183	307	713
Sugar	....	....	....
Miscellaneous	....	....	....
Total	$7,365	$4,887	$7,765


PRICE INDEX FOR FATS AND OILS
Index Number Aug. 1909-July 1914=100
Fats and oils
All farm products
1929 1930 1931 1932 J F M A M J J A S O N D J F M A M J J A S O N D
1933
1934


BUSINESS ACTIVITY AND PRICE INDEX 1930-1934
1927-1929=100
① - New York Journal of Commerce
② - Business Week
Commodity Index - ①
Business Activity - ②
Yearly Average 1930-1932
1930 1931 1932 J F M A M J J A S O N D J F M A M J J A S O N D
1933
1934


SOLAR CONSTANT OF RADIATION 1920-1934
Cal. per Sq. Cm per Minute
Normal
Observed solar radiation constant
Running forecast of the solar constant
1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934

NEW METHODS ...PACKAGES ...PRODUCTS

Fine Screen Clarifies Eggs And Improves Texture

There is no chance of shell fragments getting into the eggs frozen by Armour & Co., Chicago. In all of its nine egg-breaking plants the company employs a new patented clarifying process. After breaking, the eggs are passed through a very fine mesh screen under pressure sufficient to force the desired egg constituents through but not the shell fragments, yolk sacks, chalazas (the strings which extend from the yolk sack to the shell membrance and hold the yolk in place) or other foreign substance. Even with the egg breakers exercising great care, several pounds of these objectionable substances are collected and removed from each 10,000-lb. lot of broken eggs. In addition to removing foreign substances, the process breaks up the fiber in the albumen and yolk, with consequent improvement in whipping quality and smoothness.

To avoid delays in production, the clarifying machine is so constructed that the screen can be taken out and replaced with a fresh sterilized one with only a momentary stop. And the operator at the same time removes the accumulation of shell fragments and other material. Each clarifying machine can handle about 10,000 lb. of eggs per work-day.

At the delivery end of the machine, the eggs go into rustproof containers and are checkweighed. Conveyors then carry them to low-temperature freezers where they are quick-frozen. The process from breaking to freezing is completed in fifteen minutes, which aids materially in maintaining a low bacteria count.

Improves Fruit Ice Cream

The familiar chunk of ice that often marks each bit of strawberry, peach or other fruit in fruit ice cream, can be eliminated, dairy specialists at the New York State Agricultural Experiment Station have found. The trick lies in allowing the fruit, after thawing, to stand overnight in the syrup in which it was stored. Fruit treated in this way does not freeze any harder than the ice cream itself, the freezing point being lowered by the sugar which penetrates the fruit.

In adding the fruit to the ice cream, the best practice is to pour the syrup into the mix in the freezer and add the fruit itself after the ice cream has been drawn from the freezer.

The Geneva specialists recommend that fruit and berries be stored at 0 deg. F. An 80 per cent cane sugar syrup is reported best for strawberries and raspberries.

Develops Method of Curing Cheddar Cheese in Cans

As the result of the demand for a small print of naturally cured cheese, a method has been developed whereby American Cheddar can be packaged and cured in cans. According to the new method, which was worked out by the Bureau of Dairy Industry of the Department of Agriculture, the green cheese, or curd, from the press is sealed in the tin container in which it is to be sold, and normal ripening is made possible by a valve in the can which permits the escape of gases but prevents the entrance of air.

In making canned Cheddar cheese, the process, up to the time the curd is put into the hoops for pressing, is the same as in making a high-grade low-moisture curd for ripening in the curing room. After the curd has been pressed in suitable hoops overnight, it is taken out and cut into prints of the desired weight or size to fit the can. These prints of green curd are then wrapped in transparent cellulose and canned, the cans being packed in shipping cartons. The cartons are then held in a cool, dry room for several months until the ripening process is completed, when the product is ready to be eaten.

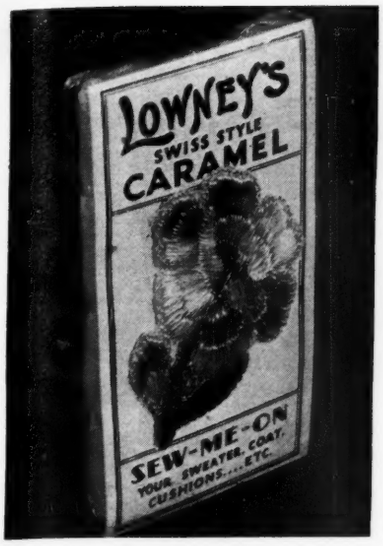
As the cheese ripens in the cans, there is no expense involved for labor in the curing room, there is no paraffining to be done and there are no losses due to shrinkage or the formation of rind. The increased cost of canning is largely offset by these savings, the Bureau of Dairy Industry states.

This small individual-consumer unit of natural cheese apparently has merchandising advantages in that it provides an attractive, sanitary package that may be trademarked and promoted through advertising.

Wheat hearts, or embryos, are removed intact and then blended with a "chip bran" and with protein from the wheat kernel to produce Vita Hearts, a "super-nutritious" food introduced by Vita-Hearts Products Co., Dayton, Ohio.

Effective use of the color of the product is made in the transparent cellulose container in which Stein, Hall Manufacturing Co., Chicago, packs its "quick" tapioca. The snowy white tapioca complements the printed red and blue colors.

Quality rather than size determined the formula for Tootsie Pop Caramel, new penny stick confection by Sweets Co. of America, Inc., New York. This candy is sold individually and is also put up in clusters of five with a transparent wrap.



Sew-Me-On premiums offer the ladies a special inducement to buy Lowney's Swiss style caramels. Both premium and product are displayed in this transparent-cellulose wrapped package.

After and before—The foil-cartoned container on the left was adopted by Gormay, Inc., Chicago, for the old Miller & Hart sauce. Designed for table use, the foiled carton harmonizes with the silverware.

The product speaks for itself in this olive-oil container of Waples Platter Co., Fort Worth, Texas. The true geometrical form of container and closure makes the package an example of "machine" art.

Explodes Wheat Hearts

Produced by a process never before used, Wheat Crackels, Quaker Oats Co.'s latest product, is an innovation in the cereal field. To make the crackles, wheat "hearts" are compressed under a pressure of 5,000 lb. per square inch. The starch granules are thus dextrinized, making them easily digested. The wheat is then whirled about in a cyclone at a temperature of 500 deg., which explodes the hearts into thin, tissue-walled particles that look much like candied tidbits.

New Labels Give Meats Triple Sales Appeal

Three objectives, each of which will promote sales, have been accomplished by Armour & Co. in redesigning the labels for its canned meats. The artist created in the new label one that makes the product more attractive on the dealer's shelves, suggests to the housewife how to use it and gives the retailer information helpful in sales.

Colors pleasing to the eye and lettering that is easily read without being conspicuous accomplish the first objective. Ultramarine blue and chrome yellow—a combination particularly effective in its eye appeal—are the dominating colors. To give "atmosphere" to a few highly seasoned products, such as chili con carne and tamales, vermilion supplements the blue and yellow. To make the labels more suitable for "island" display and to enable the clerk behind the counter to see exactly what the customer sees in front, the labels were made identical front and back.

The new labels carry, in addition to net weight, a statement informing the consumer how many servings she can get out of a can. Popular methods of utilizing the contents also are suggested. These features aid the storekeeper in promoting sales and render the housewife a service as well.

A "plus phrase" with appetite appeal, such as "fixed flavor," "famous flavor" and "delicious," has been added to the label for each product.

Whole-Wheat Dessert

Both arrowroot and cornstarch are absent from the formula for the chocolate pudding recently introduced by the newly formed F. R. Warner Food Products Co., Inc., Chicago. Whole wheat is the thickening agent in this dessert, it being malted and flavored with milk chocolate. Aside from its appeal as a dessert, the Warner pudding offers whole wheat in the form of a sweet. The product was developed by Pacini Laboratories, Inc., and Dr. A. J. Pacini is one of the incorporators of the Warner company.

Prepared Doughnut Flour

Doughnut flour has been added to the long list of prepared mixes which food manufacturers offer the consumer. Food Laboratories Corp., Chicago, has brought out Do-Nut Dixie Fluff, to which water is the only ingredient that must be added—milk, eggs, sugar and shortening being put in at the factory. Of vital importance to the keeping qualities of the flour is the so-called non-rancidifying shortening used. Do-Nut Dixie Fluff is packaged in cardboard cartons containing 20 oz., or enough flour to make about 30 doughnuts.

Vitamin D Concentrate

No fish odor or taste is imparted to food by addition of the vitamin D concentrate, Clo-dee, because it is purified to eliminate that characteristic. This is what Health Products Corp., Newark, N. J., say of their product, which they obtain from the non-saponifiable fraction of cod liver oil. This concentrate is dissolved in a bland oil for easy incorporation into foods. It is produced in various concentrations, one of which contains more than 100 times as much vitamin D as high-grade cod liver oil.

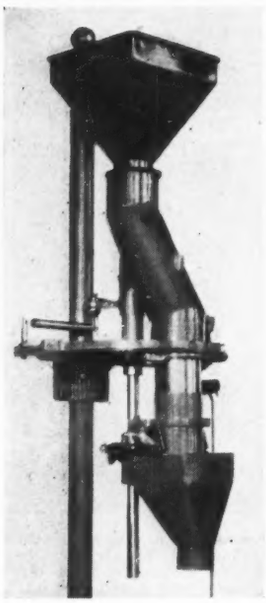
Berry and Wheat Cereal

Berries are dehydrated, pulverized and blended with whole-wheat flour to produce Brownie B, the child's cereal now being manufactured by Health Wheat Corp., Chicago. There being an ABC theme in the grade A wheat, vitamin B, Child's Cereal combination, the manufacturer is packaging the food in containers representing building blocks. A small punch opening in one side of the carton permits the contents to be used without impairing the usefulness of the "block" as a child's toy.

Powdered Vegetables

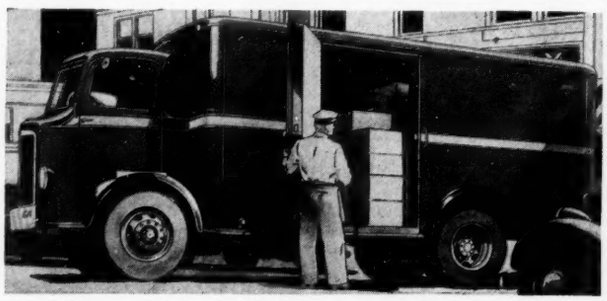
Practically the entire nutrient content of carrots, spinach, tomatoes, wheat germ, soy beans and brewer's yeast is put into Vegetable Concentrate produced by Battle Creek Food Co., Battle Creek, Mich. The raw vegetables are ground and dehydrated, some of the vitamin G being lost but the vitamins A, B and E remaining in abundance. In powdered form, the concentrate is readily soluble in liquids.

NEW • EQUIPMENT • FOR



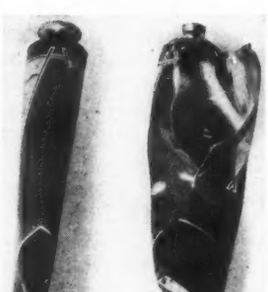
All-Purpose Filler

Built for all-purpose service, the Utility Filler placed on the market by Triangle Package Machinery Co., 906 North Spaulding Ave., Chicago, Ill., fills cartons, cans, bags, bottles and envelopes with free- or semi-free flowing products. The machine requires no motor. It fills up to 40 packages per minute and may be had in sizes to handle packages of from 1 oz. to 2 lb. Simple in design and small, this filler has the advantages of low cost and portability.



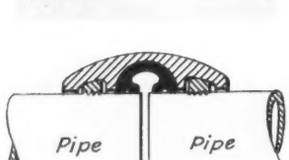
One-Stage Pulverizer

Screen pulverizers affording a one-stage process for reducing soft materials to medium fine powders have been placed on the market by Raymond Brothers Impact Pulverizer Co., 1302 North Branch St., Chicago, Ill. These machines, made in three sizes, employ a rotary impeller. The No. 00 machine is employed for grinding potato starch to a fineness of 91 per cent passing 200-mesh at a capacity of 1,800 to 2,000 lb. per hour; pulverizing salt to 80 per cent through 200-mesh; reducing mixtures of salt and spices to 40-mesh fineness at 500 lb. per hour; powdering malted milk and dried milk at a rate of 750 to 1,500 lb. per hour; and for grinding sugar.



Leakproof Collapsible Tubes

Through the use of an adhesive precoating, an airtight and leakproof closure for collapsible tubes has been developed by F. J. Stokes Machine Co., Philadelphia, Pa. The precoat is applied by the tube manufacturer, and the filled tube is closed by folding over and crimping with heated jaws. Tests show that the new airtight seal has a leak resistance of 47 lb. per square inch, and an average bursting strength of 48 lb.; most of the tubes tested burst before the closure gave way. In another test, the tubes stood for six months without developing a leak when filled with kerosene.

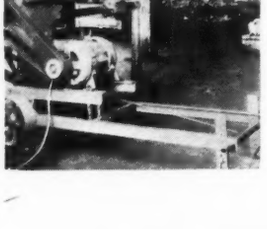


Jiffy Pipe Coupling

Pipe may be joined without threading, grooving, beveling or upsetting the end with a coupling developed by Champion Machine & Forging Co., 3675 East 78th St., Cleveland, Ohio. The coupling consists of two half-sections which contain gripping devices, a metal-protected gasket and two bolts for clamping. The gasket is designed to provide a double seal effective against either pressure or vacuum. Tests indicate that the coupling will stand a tension up to 4,000 lb. per square inch.

Portable Motor Base

A truck that will convert a motor or gasoline engine into a portable power plant has been announced by Rockwood Manufacturing Co., 1801 English Ave., Indianapolis, Ind. The truck will accommodate almost any standard electric motor or engine up to 400 or 500 lb. in weight. Front and rear stops and stakes assure solid footing, so that the truck can be locked into position and will not creep or crawl while the drive is running. The weight of the motor or engine is pivoted so that it maintains belt tension. One man can handle the truck.



Trucks Carry More Pay Load

Two new types of trucks designed especially to meet length and weight restrictions imposed by statutes in different States without sacrificing pay-load capacity are announced by General Motors Truck Co., Pontiac, Mich. They are "cab-over-engine" and "set-back front-axle" models. For any given pay-load capacity both are shorter than conventional trucks, and the wheelbase and turning radius are reduced. The cab-over-engine models carry only 67 per cent of the load on the rear axle and the set-back-axle trucks carry 70 per cent. In the former type the radiator grille may be swung open, permitting removal of the engine, which is mounted in a sub-frame on rollers. For ordinary maintenance work, access is gained through the engine cover in the cab.

Simplified Carton Sealer

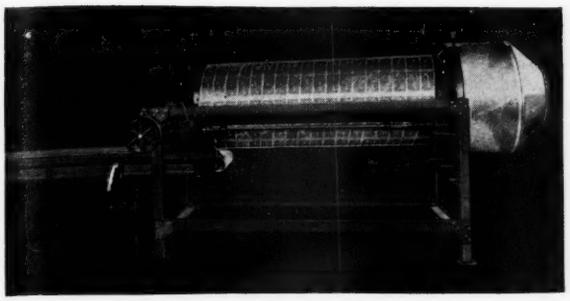
There is no need for a compression sealing unit with the new carton-gluing machine made by Standard-Knapp Corp., 43-27 33d St., Long Island City, N. Y. Furthermore, this machine will handle, without adjustment, cartons of different lengths and heights. When package width is changed, frames of corresponding dimensions are placed on the conveyor. As the cartons enter this machine, an operator inverts each one, placing a cardboard filler beneath the inner flaps of the cover if the jars contained are smaller than the space between those flaps. As the carton moves along the conveyor, it passes over short rollers which set at an angle so as to permit the bottom outer flaps to drop down. Further along, a tapered steel plate fixed in the track passes between the inner and outer flaps. Then the partly opened flaps pass over curved plates, resembling plows, which swing them down and outward into a horizontal position. The flaps then pass over rollers that apply glue to their under surfaces. Beyond the gluing rolls, another pair of curved plates swing the glued flaps back into place over the inner flaps and the weight of the carton applies the pressure which is necessary for sealing.

Fumigant

Insects and their larvae and eggs are destroyed by Malium, a fumigant introduced by Michigan Alkali Co., 10 East 40th St., New York, N. Y. Malium is a colorless, volatile liquid which has no persistent odor. Containing carbon dioxide with newly developed synthetic chemicals, it leaves no taste in foodstuffs, and is not harmful to human beings, the manufacturer reports.

Steam Turbines

Mechanical-drive steam turbines with built-in speed reducers having ratios of from 2 to 1 up to 17 to 1 have been introduced by Coppus Engineering Corp., Worcester, Mass. The turbines are built with single and double reduction units, their power rating ranging up to 90 hp. for low speed ratios and up to 25 hp. for the highest speed ratio available.



Continuous-Feed Bean Snipper

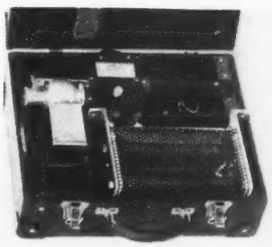
Canners of cut green and wax beans can cut the ends off beans at the rate of 1,000 lb. an hour with the continuous-feed snipper developed by Chisholm-Ryder Co., Inc., Niagara Falls, N. Y. A screw feed carries the beans in a thin stream from the hopper to the discharge end of the machine. As they move along, the beans drop into series of pockets, the bottoms of which form the outer surface of a perforated cylinder. Sloping shoulders in the pockets guide the beans into the apertures, through which the ends protrude. A reciprocating knife operating against the surface of the revolving cylinder removes the ends. The machine is driven by a 1-hp. motor; it is about 10½ ft. long with a cylinder diameter of 2½ ft.

Refrigerant Serves As Motor Fuel

A cooling system whose refrigerant may be used as motor fuel after it has passed through the cooling coils is on the market. Known as the Petrogas system, this truck-refrigerating equipment is distributed by McCord Radiator & Mfg. Co., Detroit, Mich. The equipment consists of a valve system which adapts the truck motor to the use of Petrogas as a fuel and of a refrigerating coil to be installed in the body of the vehicle. A product of Shell Development Co., Petrogas in condensed form is put up in tanks which keep it under pressure until it is released into the refrigerating system. As a motor fuel the new refrigerant is said to be comparable to premium gasoline, while its cost is not to exceed that of straight-run fuel.

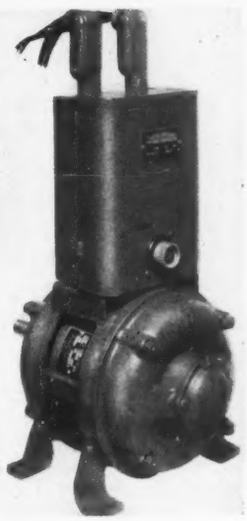
Ultra-Violet Lamp Reveals Adulterants

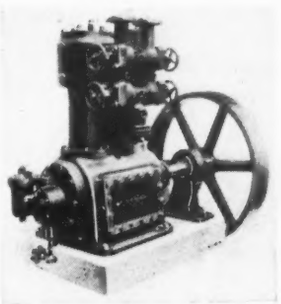
A portable ultra-violet lamp that may be used conveniently to make qualitative tests of substances by the fluorescent method has been developed by National Carbon Co., Inc., Cleveland, Ohio. This lamp may be used to detect the presence of certain adulterants and, where the characteristic fluorescence is sufficiently distinct, to determine the origin of the substance itself or the nature of an adulterant. It may be used to detect adulteration of olive oil and spices, to identify coating on coffee beans, and to detect the presence of molasses in boiler-feed water. The lamp operates on a 110-volt circuit and takes a current of about 12 amp. The intensity of ultra-violet radiation is 3,000 micro-watts per square centimeter, 15 cm. from the arc. The arc is entirely inclosed and the rays are emitted through a window of special glass which screens out all but a faint trace of visible light.



Protected Motors

Motors with a protective device built into the winding to cut off the power in event the motor becomes overheated through overloading, poor ventilation or single-phase operation, have been brought out by Lincoln Electric Co., Cleveland, Ohio. These motors are a.c. induction machines built in sizes from ½ to 30 hp. for either two- or three-phase operation and for standard commercial frequencies and voltages. Controls are mounted on the motors.





Compressors For Refrigerants

Two-cylinder vertical compressors for ammonia and Freon service of improved design are announced by Worthington Pump & Machinery Corp., Worthington Ave., Harrison, N. J., in capacities ranging from 1 to 100 tons. These machines have roller main and outboard bearings. Oil feeds to the connecting rod bearings under pressure. Large valve areas have been obtained by locating the suction valve in the top of the piston and the discharge valve in a removable safety head.

Electric Fly Spray

Designed to eliminate flies and other insects without creating objectionable odors or contaminating foodstuffs, X-Termador sprays a liquid insecticide into the air by the action of steam generated within the unit. Manufactured by X-Termador Co., Springfield, Mass., the unit employs two containers, one for water and the other for the insecticide. Generated by electrically produced heat, the steam discharges over the nozzle of the insecticide container and ejects the chemical in spray form. The X-Termador operates on ordinary lighting circuits, taking a wattage of 550 to 600. The "X-T" liquid used with it contains no material which will stain or which is harmful to people.

Super Pulpers

Super pulpers in two models that handle 5 to 10 tons and 10 to 15 tons of material an hour have been placed on the market by Sprague-Sells Corp., Hoopeston, Ill. In these machines the revolving paddles are mounted slightly eccentric to the screen, coming closest to it at the extreme bottom of the pulping chamber, thereby providing a pressing action. There are four full-length paddles and four auxiliary ones at the feed end. These pick up the material and spread it over the screen, and a concave baffle plate prevents it from rushing immediately to the center of the pulping chamber.

The Manufacturers • • Offer • •

Plant Equipment—"Buflovak" and "Buflokast" products. Buffalo Foundry & Machine Co., Buffalo, N. Y. Bulletin No. 275; 16 pages; profusely illustrated. General catalog.

Coffee Brewing—"The Correctness of Grind." Associated Coffee Industries of America, 11 Water St., New York, N. Y. Pamphlet; 12 pages. The first of a series of research publications.

Gas Heaters—Units for industrial and commercial applications. General Gas Light Co., Kalamazoo, Mich. Booklet, 39 pages; illustrated with installation views and line drawings.

Carriers—Vibrating screens, conveyors, feeders, coolers and dryers. Jeffrey Mfg. Co., Columbus, Ohio. Bulletins No. 579, 581, 582 and 583; all illustrated.

Compressors — Single-stage units, steam and motor driven. Worthington Pump & Machinery Corp., Harrison, N. J. Booklet, 7 pages; illustrated.

Filters—Zsigmondy ultra-filtration apparatus and membranes. Pfaltz & Bauer, 300 Pearl St., New York, N. Y. Catalog No. U3, 28 pages; well illustrated. Includes bibliography.

Packaging — Representative high-speed machinery. Stokes & Smith Co., 4900 Summerdale Ave., Philadelphia, Pa. Illustrated folder.

Electric eye — "Manual of Selenium Cells and Circuits." Acousto-Lite Corp., Ltd., 2908 Vermont Ave., Los Angeles, Calif. Booklet, 29 pp.; many line drawings.

Nickel-Clad Steel—For the process industries. Lukens Steel Co., Coatesville, Pa. Booklet, 11 pages; well illustrated.

Can-Making—"The Story of the Tin Can." National Canners' Association, Washington, D. C. Booklet, 11 pages; illustrated.

Insulation—In the food products industries. Johns-Manville, 22 East 40th St., New York, N. Y. Booklet, 72 pages; very well illustrated. Packings and refractory cements included.

Brewery Equipment — For brewing and malt milling operations. Allis-Chalmers Mfg. Co., Milwaukee, Wis.; Bulletin 149-A, 15 pages; illustrated.

Flooring — "Stonoleum," for new, old and worn floors. Continental Asbestos & Refining Co., 1 Madison Ave., New York N. Y. Illustrated leaflet.

Vacuum-Packing — Packaging coffee in glass. Owens-Illinois Glass Co., Toledo, Ohio. Illustrated pamphlet.

Circuit Breakers—Small, oil-type, for indoor, outdoor and subway placement. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Catalog 33-200. 70 pages; profusely illustrated.

Six-Hour Day Cuts Costs At Kellogg Plant

(Concluded from page 185)

operation, the new system proved equal to or superior to the old one under which the employees worked eight hours a day on three shifts. There was a 20 per cent improvement in the health of the employees and an even greater improvement in lost-time accident records. Under the six-hour day there has been a decrease of 32 per cent in the number of lost-time accidents in the plant. More units per dollar of overhead as well as reduced total manufacturing costs per unit testify to the workers' efficiency under the new plan. This in spite of the fact that wage rates were kept at a level which has given the employees more purchasing power than in 1929.

Adopt Shorter Work-Week

Hours of labor and rates of pay comparable to those sought by the Connery bill, recently introduced in the House, have been put into effect by George F. Wiemann Co., New York, and by the packaging machinery industry.

The Wiemann company reduced its hours from 40 to 35 per week, with no reduction in weekly wages. All employees will work five days of seven hours each. Those driving vehicles will be permitted to work five eight-hour days. Overtime will be paid for at 1½ times the present weekly wage.

The packaging machinery industry has gone even further, adopting the 30-hour work week for common labor at 50 cents an hour. Under the code approved in October, the laborers receive a minimum of 40 cents an hour for a 40-hour week.

Food Companies Make Plans For Exhibits at Fair

Food manufacturers seem to be making greater plans for this year's World's Fair than were carried out last summer. Last year little was done to educate visitors to the fair in the mysteries of the baking industry. But it will be different this time, for Continental Baking Co. has bought the Dairy Building, and will install dough mixers, traveling ovens, slicers, wrapping machines and other equipment used in the modern bakery.

Quaker Oats Co. will have an enlarged exhibit during 1934, a battery of its famous "guns" for making breakfast foods being added to the exhibit that last year ranked at the top in drawing power. Mrs. Snyder, Chicago's star retail confectionery manufacturer, will demonstrate how candy is made. Coca-Cola's impressive bottling exhibit will be back this year, as will the exhibits of Atlas Brewing Co., Morton Salt Co., National Biscuit Co., Stewart & Ashby Coffee Co., Julia King Products, Gerber Products, Vienna Model Bakeries and Standard Brands.

Other food companies which already have contracts for exhibits include Glidden Co.; Durkee Famous Foods, Inc.; Chr. Hansen's Laboratory; National Sugar Refining Co. of New Jersey; Urbana Laboratories; Old Monk Olive Oil Co.; Cudahy Packing Co.; Libby, McNeill & Libby; and Straub Honey.

California Canners Meet

Problems brought about by New Deal licenses, production allotments, marketing agreements and general code provisions occupied most of the attention of the 30th annual convention of Canners' League of California, held at Del Monte, March 1-3. Of particular interest was Dr. F. R. Wilcox's talk on marketing agreements for pears, peaches and apricots. These agreements would establish a 30-cent wage rate for the West, with unlimited hours. Surveys are now being made to set quotas for canned, fresh and dried apricots and peaches. Dr. Wilcox indicated that the peach-control agreement in 1933 probably would be tried in modified form for 1934. He also said that a five-year plan for uprooting peach orchards will be started after a survey has been completed.

To Air Premium Problems

Problems of the premium user will be taken up in round-table conferences at the fourth annual National Premium Exposition and Convention to be held in Chicago, May 7-11. Charles Wesley Dunn, general counsel, Associated Grocery Manufacturers of America, and O. J. Corbett, vice-president, National Tea Co., will be among the speakers.

Against "Chemicals" in Food

Among the 121 consignments of food and drugs seized during February by the Food and Drug Administration, there is one of particular significance in that it rules against substitution of synthetic chemicals for food. It involves two shipments of vinegar labeled "pure cider vinegar" in which adulteration by the addition of "chemical" acetic acid was proved.

In commenting on the case, H. A. Lepper, of the Food and Drug Administration, deplored what he said was the tendency on the part of various manufacturers to substitute chemical acetic acid for vinegar.

CONCENTRATES

Bread consumption having declined from 230 lb. per capita in 1900 to 160 lb. past year, the baking industry has inaugurated an intensive advertising drive against popular fallacies about its product . . . John Brandt, president of Land O'Lakes Creameries, was reported to have been banned from Department of Agriculture and Farm Administration buildings in Washington as a result of his charges that the administration had broken its promise to the dairy industry and that Secretary Wallace was "unreliable" . . . Kentucky has enacted a law standardizing weights of flour packages in seven sizes—2, 6, 12, 24, 48, 96 and 196 lb.—and stipulating that the net weight be printed on the package.

France granted the United States an apple and pear quota of 5,000 tons for the second quarter and received a wine allotment of 1,100,000 gal. for March and April . . . A bill introduced in the House would establish a fund to foster salmon propagation in the Columbia River district.

Germany has set the lard import quota for the United States at 25,643.8 metric tons for the current year . . . At the beginning of the year eight plants in Germany were extracting lard by the organic solvent process and ten additional plants were under construction. Lard by this method costs about twice as much as American lard without the duty . . . A German chemical factory is producing vitamin C in crystalline form from paprika, which is rich in ascorbic acid.

In Japan, a process has been discovered for preserving fish by CO_2, the fish being salted and sealed in a container filled with carbon chloride . . . Processes for artificial aging of alcoholic beverages fall principally into four classes: treatment with gaseous oxidants, exposure to actinic rays, electrolytic treatment and use of catalysts, according to a paper read before American Chemical Society . . . Simplified practice recommendations covering sieve sizes of canned peas may be obtained from the Government.

In cooperation with Mayonnaise Institute, the Department of Commerce is undertaking its sixth annual survey of production and distribution of mayonnaise and related products . . . A third edition of the Department of Commerce bibliography on air-conditioning is being prepared.